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COMPUTERWORLD

Objects spur users' licensing concerns

By William Brandel

The age of software components is upon us. Too bad nobody — not even the vendors that deliver the products — has any idea how to legally distribute, track or control this next-generation application technology.

Last week, objects took another step into information systems shops as WordPerfect Corp. and Lotus Development Corp. joined Microsoft Corp. in delivering application suites with at least a modicum of Object Linking and Embedding 2.0 capabilities [CW, June 27].

For example, the new PerfectOffice Professional from WordPerfect lets users build their own objects with Novell, Inc.'s Visual AppBuilder, while its PerfectLinks integration tool will let them swap in objects from other applications.

With a bevy of applications on the market that enable users to swap in tasks from other applications comes the complication of staying clean and legal.

Swap meet

"So what happens when you start plugging in other modules from other vendors into these suites?" asked Lee Allen, manager of field and decision support at Schering-Plough Corp. in Union, N.J.

Schering-Plough has been deploying componentized applications using OLE 2.0-compliant Synergy from Prodea Software Corp. in Minneapolis and Visio from ShapeWare Corp. in Seattle.

"Do I now have to purchase a site license for an entire word processor to run their spell checker with the suite I bought on a concur-

Objects, *page 16*

Client/server migration

Support apps snub hosts

By Rosemary Calasso and Julia King

As customer service becomes more critical to businesses, a growing number of companies are dumping mainframe-based support applications and turning to client/server systems to get the flexibility and ease of use they need.

> Companies spend an average of $529,000 to upgrade or replace their customer service systems, according to an International Customer Service Association 1994 Benchmarking Study.

Some large information systems shops are writing their own customer support applications for client/server platforms because they cannot find a package that suits all of their needs. Others are turning to a new crop of client/server support packages from a handful of small companies.

Analysts are pegging customer support as the next hot client/server application market thanks to recent rollouts. These include tools from companies such as The Vantive Corp. in Mountain View, Calif., Scopus Technology, Inc. in Emeryville, Calif., and Clarify, Inc. in San Jose, Calif. Lotus Development Corp. has also

Client/server, *page 113*

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IBM stretches tape

Per-megabyte pricing to be slashed, capacity tripled

By Craig Stedman

IBM is preparing to launch early next year a high-capacity replacement for its venerable 3480/3490 tape drives — a move that will drive down the cost per megabyte almost 90% and triple the data transfer rate of the 3490E.

IBM officials said the tapes, code-named NTP for New Technology Prototype, will store 10G bytes of uncompressed data but sell for roughly the same price as the 800M-byte 3490E.

Users who now pay about $100,000 for four 3490Es, with a total capacity of 3.2G bytes plus a controller, should be able to get 40G bytes for the same amount of money with NTP, noted Stan Corker, an analyst at International Data Corp. in Framingham, Mass.

As the tape turns

A COMPARISON OF THE 3490E WITH FUTURE HIGH-CAPACITY TAPE CARTRIDGES

	IBM 3490E	IBM NTP	StorageTek Redwood
Uncompressed capacity		10G bytes	25G bytes
Transfer rate		9M byte/sec.	11M byte/sec.*
Recording method		Longitudinal with serpentine interleave	Helical scan
	CURRENT	1995	

*INDUSTRY EXPECTATION

Besides the precipitous drop in per-megabyte pricing, NTP promises an expanded capacity that could allow large mainframe shops

IBM, *page 10*

OfficeMax-imizes frame-relay net

By Thomas Hoffman

OfficeMax, Inc., the $1.8 billion office supplies superstore chain, is positioning itself for annual savings of $2 million to $5 million as it launches what analysts said is the world's largest privately operated frame-relay network.

This week, OfficeMax will have linked 330 of its 350 national outlets on MCI Communications Corp.'s HyperStream frame-relay network, said John Hnanicek, senior vice president of information systems at the Shaker Heights, Ohio-based firm.

▲ OfficeMax's John Hnanicek: *'A year ago, we probably would have gone with satellite instead of frame relay. But that's the beauty of frame relay — it offers greater bandwidth, higher capacity and lower costs than other technologies.'*

Money saver

"The biggest chunk of our phone charges were tied to [customer] credit and check authorizations," Hnanicek said last week. "By moving to frame relay, we basically eliminate paying a premium for those services."

By switching its communications infrastructure from dedicated point-to-point connections to frame relay, the company anticipates a slew of benefits within the next year, according to Hnanicek and other company executives. Those benefits include reduced communications costs, higher network bandwidth and improved customer service.

Although the company declined to specify OfficeMax's financial investment in frame-relay services, analysts placed those costs at $4 million to $6 million.

The way we were

Historically, OfficeMax outlets have been linked to credit-card authorization agencies via dial-up connections. Yet this approach was expensive and sluggish — authorizations often took 18 to 20 seconds. With the higher-bandwidth 56K bit/sec. frame-relay backbone, OfficeMax expects to complete credit authorizations in

OfficeMax, *page 113*

It's hard work to build one breakthrough system but harder still to keep building them. IS executives like Eli Lilly's Steven Cooper are finding ways to make innovation and creativity the rule rather than the exception. See Management, page 88.

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What's Inside

July 4, 1994

The CW Guide to LAN/SNA Networking

MUCH OF TODAY'S mission-critical data is available only through an IBM mainframe SNA connection. While there are many ways to link LANs with SNA, the wrong choice can lead to significant cost and performance problems. Our guide to LAN-to-SNA networking examines the best routes for users. It also includes a 200-user Buyers' Satisfaction Scorecard featuring the top SNA gateway vendors and a Firing Line review of CrossComm's latest router option. PAGE 77.

LAN doorways to SNA data

NEWS

■ Initial feedback from a handful of **early beta testers of Microsoft's Chicago** operating system, which entered broad beta testing last week, reveals great enthusiasm for the product. *Page 4*

■ **Information Builders** rolls out an overhauled version of its Enterprise Data Access middleware software. *Page 14*

■ The promise of **wireless communications** took a big step toward reality last week, thanks to three major government and industry initiatives. *Page 16*

■ **Silicon Graphics** adds two entry-level models to its RISC-based supercomputers. *Page 24*

COMPUTER INDUSTRY

■ **Acer** has become the largest PC maker in Taiwan and the first one to crack the **U.S. Top 10** this decade. However, its recent decision to spin off operating units into public companies has not yet been played out. *Page 32*

DESKTOP COMPUTING

■ Last week, **Borland announced its long-awaited** dBase for Windows application. *Page 41*

WORKGROUP COMPUTING

■ Despite the fanfare, **Microsoft's Exchange messaging platform** faces increasingly stiff competition due in part to a ship date that has slipped by more than a year to early 1995. *Page 47*

ENTERPRISE NETWORKING

■ Financial industry executives at a recent conference bemoaned the lack of security on the **information highway**, even as they prepare to make broader use of it. *Page 55*

LARGE SYSTEMS

■ **Very large databases** present special care and feeding problems for database administrators, including backup. *Page 61*

APPLICATION DEVELOPMENT

■ **Taligent** recently demonstrated its development framework running on top of Microsoft's Windows NT and IBM's OS/2, as well as pieces of it running with Hewlett-Packard's HP/UX. At the same time, HBO demonstrated an application it created with Taligent's wares. *Page 65*

MANAGEMENT

■ Before each 1995 Lincoln Continental rolls out of the factory, it has been truly test-driven now that **Ford designers are using a new simulation development** application to practice before they produce. *Page 69*

IN DEPTH

■ **Usability guru Donald Norman** reveals how developers can create software and systems that users hate. *Page 91*

THE CW GUIDE TO LAN/SNA

■ The **CW Guide to LAN/SNA Networking** examines LAN-to-SNA routes and recommends the best ones for particular user needs. *Page 77*

CAREERS

■ Look no further. **Classes for the Common Object Request Broker Architecture** are starting to emerge. *Page 95*

MARKETPLACE

■ Where are **networking budgets** being spent? Top purchases include routers and switching and non-switching hubs. *Page 103*

COMMENTARY

■ The result of the Intel/Hewlett-Packard alliance is likely to be a RISC chip that competes with Sun's SPARC and the IBM/Motorola PowerPC, **Charles Babcock** says. *Page 6*

■ **Paul Gillin** issues a call to quicken the pace of deregulating telecommunications. *Page 36*

■ It's time to redefine what's meant by "open" systems, **George Shaffner** says. *Page 37*

■ CIOs are winning some battles for prestige and losing others, **Paul A. Strassmann** says. *Page 37*

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Executive Briefing

While users demand — and vendors push — the concept of **componentized software**, there is no real way to distribute or track it. *Pages 1 and 65*

Desktop symmetrical multiprocessing gets a boost as IBM announces a new version of OS/2, and NEC and AST deliver new hardware. *Pages 6 and 42*

As **Lotus and third parties fill much-needed development tool gaps** in Notes, users say the communications software still has a ways to go before it can become the enterprisewide platform vendors are pitching. *Pages 14 and 68*

Xerox, The Evergreen Group and Motel 6 are in vastly different industry sectors, but they are all united in their quest to move to client/server architectures. *Pages 14, 41 and 61*

Broadband multimedia services are hot, as Oracle and BellSouth strike an alliance, and AT&T delivers on a multivendor strategy. *Pages 4 and 55*

Dun & Bradstreet Software names Doug McIntyre president and CEO as it moves downscale with a Windows-based human resources package. *Pages 12 and 48*

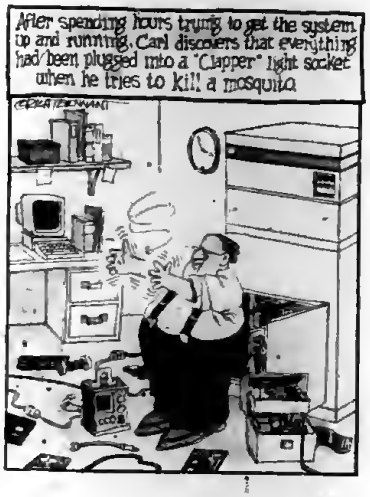
As IBM begins to consolidate its PC operations into two locations, it offers a glimpse of its Workplace OS for handheld systems. Meanwhile, IBM could be running behind schedule on delivering its PowerPC systems, even as Big Blue and Sun agree to put Sun's Solaris onto the PowerPC. *Pages 8, 12 and 28*

While customers continue to spend money on routers and hubs, they are not sure about all the bells and whistles included in network management wares. Meanwhile, AT&T rolls out an ambitious network management plan. *Pages 56 and 103*

Novell gets set for a big UnixWare push next year as customers rue the passing of Novell's investment in NetWare 3.x and wonder about migration issues for 4.x. *Pages 12 and 47*

Images are on the wing at the Pontifical Library in Rome, as it computerizes some rare texts and puts them on the Internet; Wang's image gets a boost as the company introduces new products; and a new imaging tool helps companies sift through piles of resumes. *Pages 48 and 50*

The 5th Wave *by* Rich Tennant



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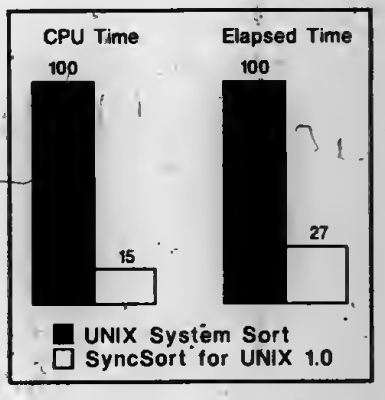

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Operating systems

Early user feedback: Chicago working well

By Stuart J. Johnston
REDMOND, WASH.

Initial feedback from a handful of early beta users of Microsoft Corp.'s Chicago operating system, which entered broad beta testing last week, revealed great enthusiasm for the product.

In an informal *Computerworld* survey of a half-dozen such sites at large and small corporations, users seemed extremely pleased with their first glimpse of Chicago, also called Windows 4.0, and said they were looking forward to its final release.

"Normally, a beta 1 [version] to me is a lot rougher around the edges than this, [which] is almost a beta II," said Matt Merrick, manager of electronic desktop publishing at Merrick Printing Co. in Louisville, Ky. The 130-employee company plans to replace Microsoft's Windows for Workgroups 3.11, which is currently running on about 30 PCs connected to two Windows NT Advanced Server machines, once Chicago ships.

"Within a month [after it ships, it will be installed] on the IS managers' desktops and then within six months, on everybody else's," Merrick said.

Improved features

"It's going to have significant value [over Windows] in things such as better connectivity and ease of use," said the chief information officer at a major utility in the South, who declined to be identified due to a nondisclosure agreement.

The utility plans to roll out at least 2,000 copies of Chicago immediately after it ships using Microsoft's Hermes System Management Server to distribute it electronically over the company's network. The CIO said he expects to install it on most of the firm's 10,000 PCs within a year after it ships.

Chief among features touted by beta testers was Chicago's user interface.

"The user interface is much cleaner and simpler" than Windows 3.1, said Bill Mattox, system consultant at a large financial services firm in the Los Angeles area. "It's better for both new and experienced users," he said.

"Chicago [runs] a lot smoother [than Windows 3.1], and it tends to multitask a lot better," said John Burting, manager of software engineering at Rheometrics, Inc. in Piscataway, N.J. "You feel like you are in more control."

A one-click deal

Several beta users cited Chicago's so-called "walking menus" as an innovation that eliminates inconsistencies in earlier Windows versions, which require users to double-click the mouse for some functions and single-click for others. In Chicago, users single-click to perform all functions.

"I really liked the single-click" feature, Merrick said.

Among other features cited as improvements over existing Windows versions were Chicago's ability to automatically configure itself to many peripherals and improved network support, including native default support of Novell, Inc.'s NetWare.

Three's the charm

Beta users cite key Chicago features

Ease of use:	Simplified installation:	Improved connectivity:
• "Walking menus" eliminate inconsistencies by mandating single-clicking for all functions	• Automatically configures many peripherals, including modems	• Features "native" 32-bit NetWare support; can also support more than one network simultaneously

No RAM worries

Despite reports that Chicago's performance may be inadequate on 386-based PCs with less than 8M bytes of RAM, early beta testers said they were not particularly concerned because systems they have been purchasing for some time have enough memory. "Over the past year, I've been configuring all of our systems to be 8M to 16M bytes," Merrick said.

However, two recent surveys of a total of 500 information systems managers, conducted separately by First Market Research Corp. in Austin, Texas, and International Data Corp. in Framingham, Mass., indicated a much greater reluctance to upgrade hardware to run Chicago [CW, June 27].

In fact, the enthusiasm displayed by would-be early adopters contrasts markedly with the results of the two surveys, which elicited a much greater sense of caution, resistance and skepticism about how quickly or even whether Chicago will deliver on its press releases.

However, despite the reluctance of many of the respondents to deploy Chicago in its first release, most analysts said they expect the next version of Windows to become the largest selling desktop operating system. International Data Corp. predicts 35 million copies will sell in the first 12 months after its release.

Senior editor Ed Scannell contributed to this story.

DEC to revamp sales

By Mary Brandel

To fulfill its promised move to an indirect sales strategy, Digital Equipment Corp. has been working behind the scenes to pull together its channel structure, which some business partners and analysts have called uncoordinated and dysfunctional.

In one scenario, recounted by a reseller briefed by Digital, the vendor would retain a very small direct sales force for its highest volume accounts. The remaining 80% to 90% of Digital customers would be serviced indirectly — some through a 60-seat telephone center in Merrimack, N.H., where staffers would direct callers to appropriate Digital partners, the reseller said.

In interviews last week, six distributors, resellers and other Digital business partners said they were either meeting with Digital in the coming week or were told by the company to check in for updates on the channel strategy in July.

All said they were anticipating an announcement in the coming month. The timing of a massive sales force cutback is still up in the air, although observers said they had heard of cuts being made.

"It's fairly clear that they must make sharp reductions in their direct sales force," said Tom McIntyre, vice president of sales and marketing at McIntyre Consulting, Inc. in Concord, Mass.

Digital officials refused to comment last week.

Many observers said a successful indirect sales strategy is Digital's only chance to regain a strong market position. "They have no choice," said Geoffrey Woollacott, an analyst at the Renaissance Consulting Group, Inc. in Pepperell, Mass. "The world is moving to indirect channels."

What is less clear is how Digital will fare with such a fundamental change.

Some resellers spoke of complicated products that take real expertise to sell. Others spoke of Digital's controlling culture, where strict rules have forbidden their dealing to key products or discouraged them from filling large orders in Digital salespeople's accounts.

Also, not everyone agrees that indirect channels are the way to go as far as customers are concerned.

"They need to address the issues of implementation carefully or they'll lose revenue," said Ray Sasso, chief information officer at J. D. Simplot Co., a Digital customer in Boise, Idaho. "They can't afford another misstep. If they don't get this right, the internal organization and customers will be so confused."

Closing out

Digital is closing its Westfield, Mass., manufacturing operation, which makes metal enclosures for computers. The facility, which employs 340 workers, will be phased out over a nine-month period. The casing operations will be outsourced.

Oracle, BellSouth pilot service

By Suruchi Mohan

■ Oracle Corp. boasted a further victory last week when it signed on yet another major telecommunications company to be its multimedia buddy. BellSouth Corp. will use the Oracle Media Server in a trial that will deliver analog, digital and telecommunications services over fiber optic/coaxial cable to a select group of users.

While the Redwood Shores, Calif.-based Oracle, which has enlisted Hewlett-Packard Co. and Scientific Atlanta, Inc. to provide server and set-top hardware respectively, counted its trophies, industry analysts were unimpressed and cynical.

"The areas they cover are huge, and [we have to] wait for them to refine," said Phil Dodds, executive director of the Interactive Multimedia Association in Annapolis, Md.

Tom Nolle, president of CIMI Corp. in Voorhees, N.J., said he is not bullish about the viability of telecommunications companies offering multimedia services to end users. "Research with end users shows that willingness to pay for home video is not high enough to support the infrastructure."

In a study he conducted between June 1993 and February 1994, Nolle found that if the cost of services rises to $50 a month, two-thirds of the users drop out; if it goes up to $100, 90% leave.

A problem for the telecommunications firms will be that revenue from the small portion of users able to pay for the services will not be enough to support the high-maintenance infrastructure video delivery requires, he said.

Pricing questions are still unresolved by alliance members. Karen White, vice president of strategy and planning at Oracle, said she estimates the initial setup cost per household will be approximately $1,000. Pricing for the service has not been determined.

The trial will begin in the second quarter of next year, after the Federal Communications Commission has approved BellSouth's proposal to lay down a fiber optic/coaxial network. Approval is expected early next year.

Initially, limited services, both analog and digital, will be offered to 12,000 users. For example, cable television will be offered on the analog side and movies-on-demand, electronic yellow pages and home shopping on the digital end.

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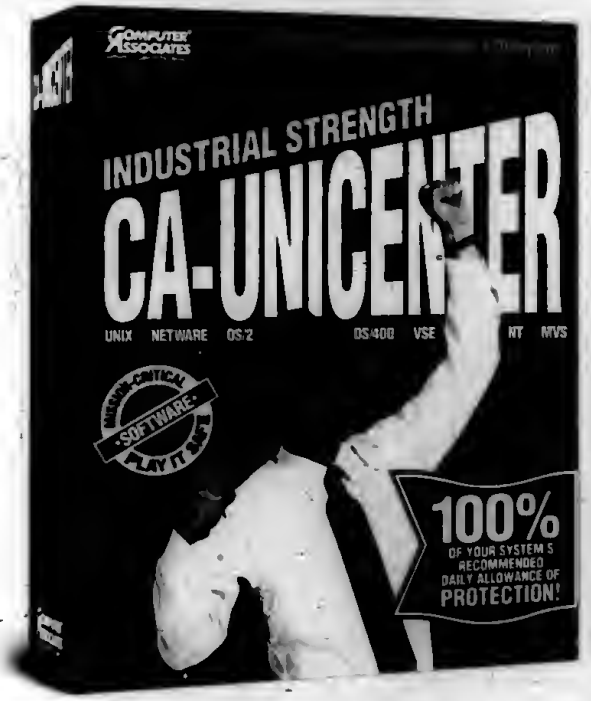

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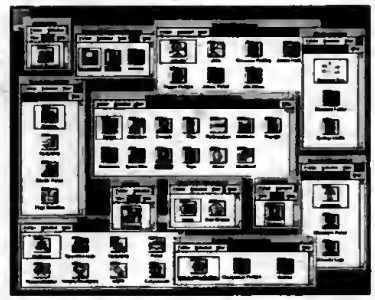

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Intel lays plans for Pentium assault

Intel is on the march, with the objective of laying seige to the IS department. It plans to upgrade its Pentium microprocessor and convert its growing 1486 customer base to Pentium as rapidly as possible.

At the same time, Intel has linked arms with Hewlett-Packard to come up with a future generation of microprocessors. The result — several years down the road — is likely to be a RISC chip that competes more directly with Sun's SPARC and the IBM/Motorola PowerPC. Through this alliance, Intel will seek to move off the desktop to supply the CPUs needed by the big customers that HP has been converting from mainframes to Unix servers.

Intel has no sales force or channels of its own that connect to such a clientele, notes Carl Everett, senior vice president and general manager of Intel's Microprocessor Products Group in Santa Clara, Calif. Both the push toward Pentium and the longer-range HP collaboration move Intel in the direction of supplying multiprocessor 1,000+ MIPS engines that scale up to meet the enterprise needs of IS.

And in case you still doubt Intel's intentions, consider that next year's first shipments of the P6, the follow-on to today's Pentium, "will have a high-end server focus," says Frank Spindler, marketing manager for the Pentium line.

Intel's direction is to supply 1,000+ MIPS engines to meet IS' enterprise needs.

Charles Babcock

It costs at least $1 billion to design and bring a new microprocessor into production. Intel is spending $2 billion this year to bring the P6 into volume production while also pressing forward with the P7 design. For Intel to make a profit on such massive investments, the chips must be sold in volume, and massive volume also translates into steadily declining prices. "If you produce a small volume, your constituency has to pay the tab," Everett notes, perhaps to plant seeds of doubt with buyers of SPARC, Digital's Alpha and Mips Technologies' R6000.

In addition, Pentium, which has twice as many active elements on the chip as the 486, is a dual-pipeline design (unlike the 486). This allows more than one instruction to be worked on per clock cycle, a capability that nets out to one instruction executed per cycle — a high rate for a CICS design. The P6 and P7 will have parity checking for error correction and built-in redundancies that offer greater fault tolerance.

"Pentium class machines will show more capabilities, pushing into the midrange and presenting IS management with a choice," Everett predicts.

So, yes, powerful multiprocessor servers will be designed with the Pentium line. It remains a less elegant chip than the Alpha or the PowerPC, given its bulky size. Intel appears to be willing to drop prices — as much as 38% starting this month — to within the 486 range and start converting prospective 486 customers to its more proprietary silicon even if its profits take a hit. Profits will tumble if Pentium prices drop to the 486 level because fewer Pentiums can be produced per wafer.

But Intel competitors such as Advanced Micro Devices, NextGen, IBM, Microelectronics and Cyrix are gearing up 486 production. Intel will seek to convert its buyers in order to retain its dominant position.

Intel anticipates that sometime next year, Pentium sales will outstrip 1486 sales. This change could occur through a massive shift of existing Intel customers to Pentium or through a shift of Intel customers to other, presumably cheaper, 486 suppliers. Some of the latter is bound to happen.

Intel executives are now ambitiously trying to address the needs of IS managers, as well as desktop users. It hasn't found the path to this audience yet, but with its volume pricing, an alliance with Hewlett-Packard and improved Pentiums, Intel is pressing closer to the citadel's gates.

Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737

OS/2 takes multiprocessing role

By Ed Scannell

With more than a year of beta testing in its rear-view mirror, IBM finally announced OS/2 for Symmetrical Multiprocessing last week, picking up support from a handful of Intel Corp.-based hardware suppliers along the way.

The new version is seen by some observers as central to any strategy IBM may use to persuade users to downsize from mainframes to true client/server solutions.

"OS/2 looks like it might be good for optimizing Intel-based hardware for scalable, mission-critical applications," said Kevin Dugan, manager of systems development at the network management center of Cable & Wireless, Inc., a telephone company in Vienna, Va.

While there remains a scarcity of off-the-shelf application software for PC-based multiprocessor systems, the symmetrical multiprocessing (SMP) capabilities built into Microsoft Corp.'s Windows NT, and now OS/2, have stimulated some interest among users.

"SMP is really the only way I see client/server becoming competitive with mainframe functionality. I don't think in terms of large projects anymore unless I think about an SMP solution," said Art Tisi, chief information officer at The Metropolitan Museum of Art in New York.

Tough road ahead

Analysts agreed that there is a growing interest in SMP hardware and software, but they cautioned that developers have a long way to go before it becomes a widely used technology.

"Users are starting to kick the tires on it. But as far as it having any real market significance in terms of shipment numbers, it is a long way out," said Ted Julian, a hardware analyst at International Data Corp. in Framingham, Mass.

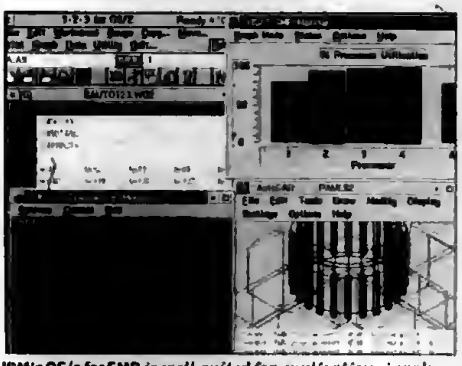
But more adventurous users such as Tisi — and others with applications that require database searches involving millions of records — said they have begun to seriously explore SMP-centered solutions.

As with most operating systems, to succeed, OS/2 for SMP or Windows NT will need a commitment from major software developers to produce applications that take full advantage of them. If third-party software makers are slow to market with such applications, however, some hardy users may be willing to build them.

"I would rather buy those apps than build them. But if there is nothing out there, then I'll have to build," Tisi said.

Optimized for both 486- and Intel Corp. Pentium-based systems, OS/2 for SMP is capable of directing a server and high-end desktop systems that contain up to 16 processors.

Information systems shops looking to save money while growing their network resources can reconfigure server systems to handle increasingly larger networks. Or they can consolidate the functions of multiple servers with just one processor onto a single system running OS/2 for SMP.



IBM's OS/2 for SMP *is well-suited for applications involving transaction processing and database queries*

As with OS/2 2.1, users with OS/2 for SMP can simultaneously run multiple DOS, Windows and OS/2 applications. IBM officials claimed that even single-tasking DOS applications will benefit because of the way OS/2 uses threads that allow an overlap of system services and applications. They added, however, that 32-bit applications written specifically for OS/2 will run significantly faster.

Version 2.11 of OS/2 for SMP complies with the Multiprocessor Specification Version 1.1, meaning that any Intel multiprocessor-based systems can run the SMP version of OS/2 without changing the BIOS, operating system or hardware interfaces.

IBM last week showed off a prototype of a 90-MHz Pentium-based system with two processors running the new operating system. Company officials did not say when the Pentium-based system would be commercially available.

Besides IBM, hardware makers that support the product include Compaq Computer Corp., Intel, AST Research, Inc. and Hewlett-Packard Co.

IBM plans to ship OS/2 for SMP by the end of summer with a suggested retail price of $395 for a one- or two-processor version and $595 for a version that handles between one and seven processors. The version for up to 16 processors is priced at $795.

Kernel ready to pop

IBM's Personal Software Products division this fall will send into beta testing a version of its microkernel that works with DOS and Windows. The company has been beta testing the microkernel among key developers since March.

Lee Reinwig, president of the division, also said he expects an OS/400 "personality" or graphical look and feel to be available for the microkernel-based version of that operating system in the "next couple of years."

The division still has hopes of delivering OS/2 for the PowerPC, which would be the first microkernel-based version of the operating system, by year's end. But he said volume shipments would not occur until early 1995.

The microkernel is a key piece of underlying technology that lends portability to IBM's operating systems across multiple platforms.

—Ed Scannell

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Proteon names president/CEO

Proteon, Inc. in Westboro, Mass., said it is restructuring to expand LAN operations and product lines. Daniel Caponn, general manager of Proteon's LAN products division, will replace Bruce Bergman as president and chief executive officer. Bergman will remain on the board of directors. The company will also lay off roughly 25% of its work force, resulting in a restructuring charge of $11 million to $15 million for the second quarter, which ended Saturday.

SEC launches inquiry into Cheyenne

Cheyenne Software, Inc. announced last week that the Securities and Exchange Commission had begun an informal inquiry into its corporate operations. BeiJane Huai, chief executive officer of the Roslyn Heights, N.Y.-based backup software developer, said the inquiry is a result of stock fluctuations. In a statement, the SEC said its inquiry into Cheyenne "should not be construed as an indication by the commission or its staff that any violations of law have occurred."

Fireworks fly at The ASK Group . . .

An undetermined number of software engineers walked away from **The ASK Group, Inc.** last week, saying they were angry about policies enacted by the firm's new owner, **Computer Associates International, Inc.** One item at issue is a noncompete agreement that CA wants outgoing workers to sign. "Some people have left in the emotion of the moment. They need to give CA a chance," said Kitty Weaver, president of the North American Ingres User Group. Neither company would specify how many workers quit or accepted severance packages, but "it was a lot of 'em," an ASK insider said. "The folks who left have received very generous severance packages. We didn't want anyone with us who didn't want to be with us," a CA spokesman said.

Sapiens deploys cost-cutting measures

Sapiens International Corp. last week said it will cut its work force by 8% and cut other expenses, all of which will result in a onetime charge of $1.5 million for the second quarter this year. In May, following lower than expected first-quarter sales, the company announced that it would review operations and likely make cutbacks.

Retix expects second-quarter losses

Citing a significant shortfall in its Open Systems Interconnect business, **Retix** last week said it expects a net loss for its second quarter. Revenue is expected to be down by roughly 20% from the prior quarter's earnings of $18,028,000 and is less than analysts' expectations. The company said it still had more than $27 million in cash and more than $74 million in assets. Exact earnings and expenses have not been released.

SunDisk to pump up its flash cards

Those thin flash memory cards are expected to get "fatter" soon, according to Nelson Chan, director of marketing at **SunDisk Corp.**, the unit leader in the PCMCIA flash card market. Chan said SunDisk will announce a technology that will enable flash cards to hold 500M bytes of uncompressed data. The announcement today will happen abroad in conjunction with a major overseas company. He declined to say when the technology will come to market.

SHORT TAKES **Digital Equipment Corp.** and **Oracle Corp.** announced a program for mainframe downsizers that promises a one-stop-shopping approach and Oracle 7.1 Parallel Server running on Alpha AXP Unix clusters.

IBM's PowerPC ship may slip

Company separately sets dates, lower prices for its 603 chip

By Jaikumar Vijayan

■ IBM last week announced pricing and availability for its new PowerPC 603 microprocessor and dropped prices on its 601 chip. The announcements came despite indications that IBM may be running behind schedule with delivery of its PowerPC-based systems.

The 66- and 80-MHz versions of the 603, which are now available in sample quantities, will be priced at $165 and $195, respectively. Volume production is expected to begin later in the third quarter.

Already there are indications that IBM, which was expected to announce a PowerPC-based PC before the end of the second quarter, has slipped behind schedule. Some analysts said they believe a combination of hardware and software problems is behind the product's slowness to market.

According to John Dunkle, president of WorkGroup Technologies, Inc. in Hampton, N.H., IBM may be waiting for the availability of native support from OS/2 for the PowerPC before announcing systems based on the processor.

OS/2 for the PowerPC, which is expected to begin beta-testing soon, will be available by the first quarter of 1995, according to IBM estimates.

Companies currently developing PowerPC systems, in addition to Apple Computer, Inc. and IBM's Personal Power Systems Division, include Groupe Bull, Hitachi Data Systems Corp., Canon Corp. and Tatung Corp. of Taiwan. None are expected to ship systems in volume before year's end.

"To be fair to PowerPC, you need to put the horse before the cart," Dunkle said. By actually making the 603 available in volume in the third quarter, IBM is setting the stage for the next phase of what it believes will be a broader acceptance of the chips in the market — native application development on the PowerPC.

Until then, using the PowerPC might be like "wearing a party hat and searching for a party," he said.

Effective cuts?

Meanwhile, IBM rolled back prices by up to 34% on its PowerPC 601 processors, which are shipping in volume in 50-, 66- and 80-MHz versions.

Analysts generally welcomed the announcements, though some said they believe the price cuts are mostly cosmetic.

As far as users are concerned, IBM's pricing actions are unlikely to spur greater availability or demand, analysts predicted.

Last week's pricing actions by IBM simply give users and OEMs a reference point for Intel Corp.'s Pentium pricing, said Linley Gwennap, editor of "Microprocessor Report" in Sebastopol, Calif. "At this point, the PowerPC is in more of a PR-war situation against the Pentium," and it is going to take a while for systems based on the new processors to roll out, he said.

IBM consolidates PC units in bid to regain profits, respect

By Michael Fitzgerald

With Compaq Computer Corp. poised to pass a wheezing IBM PC Co. in the crucial race for PC market leadership, IBM is targeting late July to initiate a reorganization intended to give its desktop business a second wind, internal sources at the PC Co. said.

Users can expect to see the PC Co., PowerPersonal and Personal Software Products Divisions begin to consolidate and move their operations to Raleigh, N.C., and Austin, Texas, the sources said.

IBM, via its new PC business head Richard Thoman, is trying for the second time in two years to jolt a corporate culture widely criticized for being sluggish and bureaucratic. The move is part of IBM's overall effort to cut corporate positions and bloated cost structures.

"The PC Co. is going to have a rough time in the next six months, and Compaq is [poised] to blow their doors off in 1995. The question is, can IBM regroup for next year?" said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.

Best bet

The physical consolidation may be a good place to start. Zwetchkenbaum said IBM's PC business has more facilities than its competitors, giving it an automatic cost-structure disadvantage.

"Thoman knows he has to transform the culture. He has [President Louis] Gerstner's support, and there's no more [former PC Co. President Robert] Corrigan to kick around — so his job is on the line," Zwetchkenbaum said.

The first step will be moving the server division from Somers, N.Y., to Austin to join the Advanced Workstation Division, sources said. A series of phased moves will result in the following:

- PC development efforts will move from Boca Raton, Fla., to Raleigh by the fourth quarter.
- ThinkPad, PS/1, PS/2 and ValuePoint teams will move from Somers and Boca Raton to Raleigh.
- PC Co. headquarters in Somers will move to Raleigh by the end of 1995.
- The PowerPersonal division will consolidate in Austin.

While the consolidations will center hardware efforts in Raleigh and server and software development in Austin, the fate of the Boca Raton operation, is still undetermined and may not be resolved by the end of the year, sources said.

An IBM spokeswoman declined to comment on the move but did say that "every part of every business in IBM is looking at ways to cut costs."

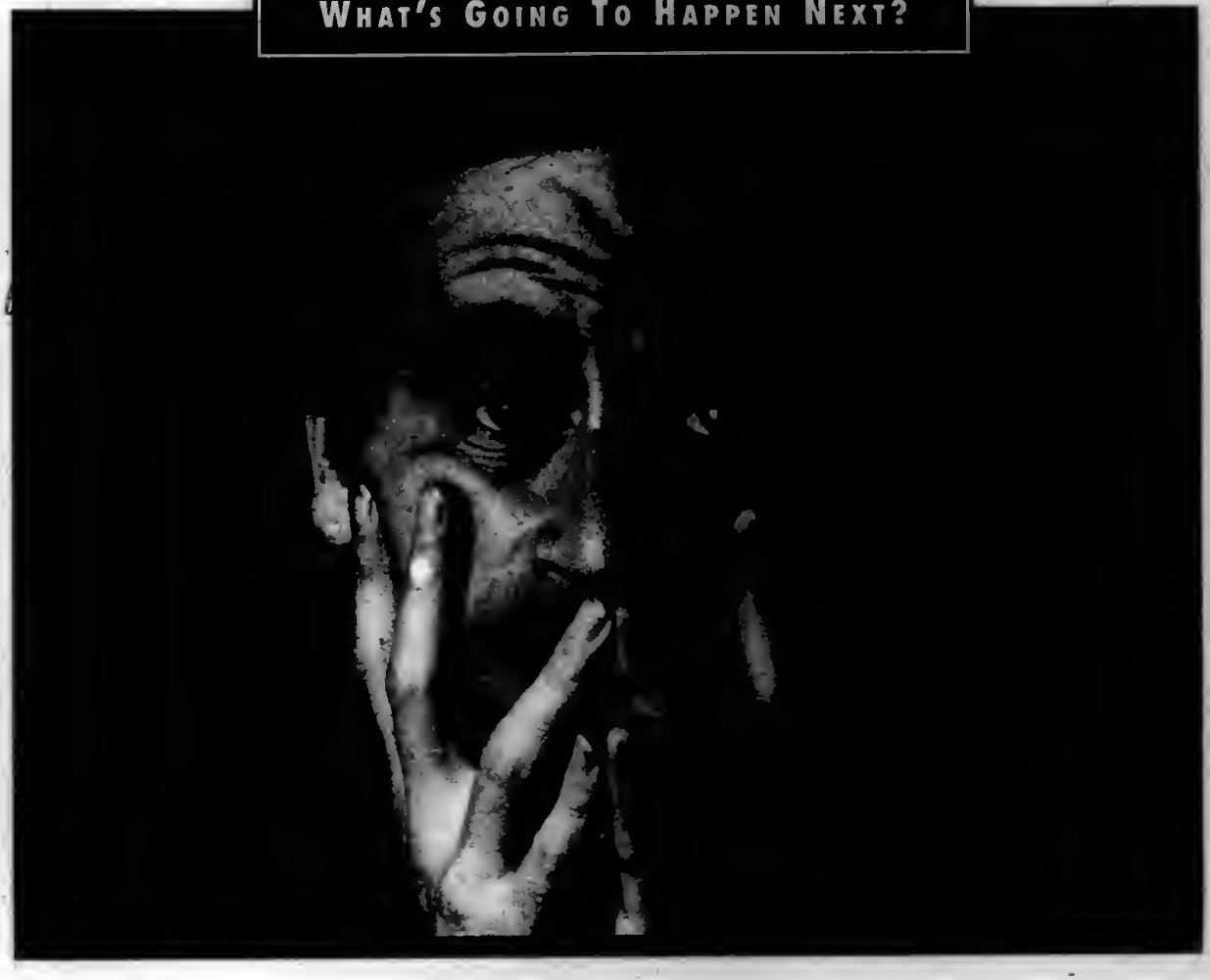
The consolidation effort comes in the wake of Corrigan's mixed efforts to revitalize IBM's once-dominant PC business. Corrigan's focus on autonomy and responsibility led to some improvements in IBM's time-to-market and price competitiveness, but the PC Co. failed to turn the corner on its fundamental problems of delivery and pricing.

Jaikumar Vijayan and Ed Scannell contributed to this story.

Slimming down

IBM's PC consolidation is part of its ongoing efforts to pare down personnel by an estimated 35,000 employees worldwide. The company quietly cut 700 jobs from its Raleigh operations at the end of June, and cuts are expected in its Austin operations in the near future, sources said.

WHAT'S GOING TO HAPPEN NEXT?



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IBM

CONTINUED FROM PAGE 1

with tens of thousands of cartridges to dramatically shrink the space they now must devote to tape storage, industry observers said.

Another key feature of NTP will be its ability to split capacity into separate logical tape volumes of about 50M bytes each that could store multiple small data sets, according to IBM officials. That should allow tapes to be filled more completely than is typical today, users said.

"I think it's a spectacular device," said Bill Neuser, manager of capacity planning and support at Great Western Bank, a subsidiary of Great Western Financial Corp. in Northridge, Calif. "It's a new way of looking at tape, and it has some interesting implications, to say the least."

Also in early 1995, tape library market leader Storage Technology Corp. plans to bring out a tape drive of its own design with an even higher capacity of 25G bytes per cartridge. This breaks with a tradition of letting IBM take the lead in developing tape technology (see story below).

While StorageTek is positioning its upcoming Redwood device as a niche product for customers with very large data sets, IBM's NTP is expected to have broader appeal because of its logical volume technology. IBM also plans to include support for accessing data sets concurrently via a buffer it is building into the tape control unit.

Logical volumes would be especially appealing because users today often fill only a small portion of a 3480 or 3490 with a single data set, resulting in a significant waste of tape, Neuser said. Tape management capabilities that IBM is promising also would go "a long way toward automating" that process, he said.

Luther Perry, information services director for Santa Cruz County in California, said the ability to put multiple data sets on a single cartridge and stage them in the control unit's buffer "could be really helpful in some environments" that now have a heavy load of tape mounts.

Raising its profile

Corker said NTP could help IBM improve on its bit-player role in the tape library market by making its small-footprint 3494 unit a viable low-cost alternative to StorageTek's silos.

IBM plans to start beta-testing the NTP drive and cartridges by year's end and will ship a rack-mount version with a SCSI interface in early 1995, said Andy Chapman, program manager for the new product. However, a full version with the control unit, logical volume support and Escon connectivity will not be ready until the second half of next year, he added.

NTP will use the same form factor as the 3480/3490 family but will be able to write more longitudinal tracks onto the tape media through an interleaving process, Chapman said. Users will be able to mix and match the old and new cartridges in a single library, with IBM's storage management software ensuring the tapes are mounted in the proper drive, he noted.

IBM automated tape library battles rival, user perceptions. See page 61.

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Tale of the tape

While IBM heads down its own route with the NTP tape drives, StorageTek is taking a different direction with its Redwood drives and cartridges in an effort to leverage its dominant position in the tape library market.

"Historically, we've followed IBM," said Gary Francis, vice president of StorageTek's Nearline storage operations. "But from customer acceptance, I think it's safe to say that StorageTek is the leader [in libraries]. So we decided not to wait for IBM."

But Francis said StorageTek does "not see Redwood as a device that will sell in large numbers." Its helical scan recording method is suited for large, continuous-stream data sets produced in scientific and seismic applications or for commercial uses such as airline reservations and credit-card billing. —*Craig Stedman*

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IBM, Sun pact to put Solaris on PowerPC

By Jean S. Bozman

IBM and Sun Microsystems Inc.'s SunSoft, Inc. subsidiary agreed last week to bring SunSoft's widely installed Solaris Unix operating system to IBM's PowerPC client machines. IBM will sell and distribute the Solaris-PowerPC machines by mid-1995.

The long-anticipated agreement on the Solaris-PowerPC port and IBM's agreement to distribute Solaris on PowerPC machines mean the companies will cooperate to build a distribution channel of independent hardware and software system suppliers for the Solaris-PowerPC platform.

IBM's distribution agreement, which includes preloading Solaris in the IBM factory, is intended to speed PowerPC's acceptance as a personal workstation.

"We want to have as broad a coverage base as we can," said Gary Griffiths, director of business development at IBM's Power Personal Systems division in Somers, N.Y.

IBM will also sell its AIX Unix operating system, OS/2, Microsoft Corp.'s Windows NT and the Taligent operating system on PowerPC clients.

For Sun, the arrangement gains another foothold for Solaris beyond its traditional Unix marketplace. By mid-1995, the Solaris 2.x operating system will be available on three platforms: Intel Corp.'s x86, Sun's SPARC and the PowerPC.

Burlington Coat's
Michael Prince says in open systems, hardware becomes a commodity but software does not

Options broadened

Users at some Sun sites immediately approved of the PowerPC port, saying it will broaden their choices for buying low-end machines.

"It would be a no-brainer for me to buy PowerPCs and put Solaris on them and to plug them into my network," said Michael Prince, director of information services at Burlington Coat Factory Warehouse, Inc. in Burlington, N.J. The 225-store clothing chain has more than 400 Sun workstations and an equal number of Intel-based PCs. With the same Solaris operating system on SPARC workstations, Intel PCs and PowerPC machines, users could share applications throughout the company.

"It wouldn't be a shift at all from an administrative standpoint," Prince said. "But if I plug [IBM's] AIX into the network, then I would have to go out and deal with the incompatibilities."

The Solaris move is also a practical concession to the fact that Sun's low-end workstations must compete head-to-head with increasingly powerful Intel Pentium PCs, industry analysts said.

"Sun has to demonstrate that buying into Solaris is not a career-threatening move," said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston. "The SPARC-compatible market went nowhere, and this has the potential of expanding support. . . . And Sun positions itself as having an operating system that is available on many platforms."

First things first

Some users said they would look at user applications first, then make operating system decisions. Mark Factor, vice president of information systems at Au Bon Pain Co. in Boston, said his site has several SPARCstation 10 servers running Solaris, an IBM RS/6000 running AIX and about 100 Intel PCs running Windows or The Santa Cruz Operation's SCO Unix.

Purchasing decisions at Au Bon Pain are based on available applications, and operating system choices follow. "We are running three flavors of Unix: SCO Unix, AIX and Solaris," Factor said last week. "I'm in this world of the open environment, and these things can work together. I don't need to have Solaris on everything to make our enterprise work."

UnixWare pressured to prove viability

Users praise robustness of 2.0 vs. SCO Unix

By Elisabeth Horwitt and Jean S. Bozman

Novell, Inc. will stage a do-or-die effort in the second half of this year to win its UnixWare operating system a place as a major industry contender.

The Provo, Utah, vendor plans by year's end to ship UnixWare Version 2.0, with major enhancements including symmetrical multiprocessing support, Unix System V Release 4.1 Enhanced Security and closer integration with NetWare 4.x, a Novell executive confirmed last week.

These developments will come none too soon, given the current industry perception that Novell is letting UnixWare go down the tubes. Before this major release, Novell plans to launch a marketing campaign and will spend $750,000 on print advertising alone, one industry source said.

Given Novell's $300 million-plus investment in buying Unix System Laboratories, Inc. last year, UnixWare should have gained more leverage in the Unix arena, analysts said.

Dying on the vine?

"There's no external evidence that they are committed to rapidly developing and deploying this product," said Rikki Kirzner, a principal analyst at Dataquest, Inc. in San Jose, Calif. "It's languishing from lack of attention, and it's not as competitive" as other Intel Corp. processor-based Unix platforms such as The Santa Cruz Operation's SCO Unix and SunSoft, Inc.'s Solaris 2.x, she said.

"Novell has said a lot about its plans for UnixWare but has not put the necessary marketing and support efforts into the product," said Chris Tyler, a systems development manager at Wm De Jong Enterprises, Inc. in Norwich, Ontario.

Indeed, Novell has shipped no more than 40,000 copies of UnixWare, according to Michael Dortch, vice president of marketing at Unix Technology Group. This compares with SunSoft's shipment of 260,000 copies of Solaris last year and SCO's shipment of 185,000 copies of SCO Unix last year, according to International Data Corp in Framingham, Mass.

Michael De Fazio, executive vice president at Novell's Unix Systems Group, said shipment numbers have picked up significantly since the release of UnixWare 1.1 in February, but he declined to give figures.

UnixWare's obvious niche is among Novell shops that want a Unix platform with built-in NetWare support.

"UnixWare's design philosophy is interconnection with NetWare. If that's what you need, it's the best" Unix platform to buy, said Charles Tilbury, a network analyst at the University of Texas' M.D. Anderson Cancer Center. Access from UnixWare 1.1 clients to NetWare file and print services is "excellent — very transparent," added Tilbury, whose organization has two production UnixWare platforms up and running.

EitherWare

Still missing, however, is UnixWare support for Novell's NetWare Directory Services (NDS), which would enable clients to transparently access either UnixWare or NetWare servers across the enterprise.

"We are moving rapidly to NDS here. Without it, UnixWare will be useless to us," Tilbury said. Novell plans to provide full NDS support for UnixWare in a 2.0 update sometime next year, De Fazio said.

Users also praised the robust nature of UnixWare, which unlike SCO Unix, comes bundled with fault-tolerant software, according to Skip Steuart, director of national accounts at Steuart Petroleum Co. The Washington oil firm uses a UnixWare server to provide customers with pricing information.

Wishes come true

UNIXWARE 2.0 IS EXPECTED TO FULFILL THE FOLLOWING DEMANDS OF USERS AND OEMS:

- Symmetrical multiprocessing and PowerPC support
- Faster, easier configuration and setup
- Broader device support, particularly for CD-ROM drives and monitors
- Enhanced security

. but not each and every one.

NOT EXPECTED WITH THE INITIAL UNIXWARE 2.0 RELEASE:

- NetWare Directory Services support
- Improved DOS emulation

D&B Software replaces chief

By Rosemary Cafasso

The Dun & Bradstreet Corp. last week appointed Douglas MacIntyre to take over the helm of its Dun & Bradstreet Software division, abruptly replacing Henry Holland as president and chief executive officer.

Holland left the company by mutual agreement, said Robert Weissman, president and CEO of Dun & Bradstreet Corp. Weissman said there was "a lot of room for improvement" in sales and marketing at the software vendor. D&B Software trails behind companies such as SAP America, Inc. and Oracle Corp. in client/server revenue, according to International Data Corp. (IDC) in Framingham, Mass.

Return engagement

MacIntyre, a former D&B Software executive who was also president of Software 2000, Inc. for three years, took a curious path back to the software company. Last month, he accepted the top job at RAM Mobile Data in Woodbridge, N.J., and held the post for seven days before resigning. RAM Mobile Data said it was surprised and disappointed by MacIntyre's decision.

Weissman said MacIntyre was selected to reinvigorate the company. "I am not a believer in the field of dreams myth," he said. "We have built the products, but that does not mean they will come. We have to get out there and convince [customers] we have the best products."

"This says [D&B Software] wants someone to come in and push the company ahead faster," said Jennifer Scholze, a senior analyst at IDC. MacIntyre "is well-equipped to handle the current challenges."

D&B Software sells the SmartStream series of client/server applications.

Senior writer Lynda Radosevich contributed to this report.

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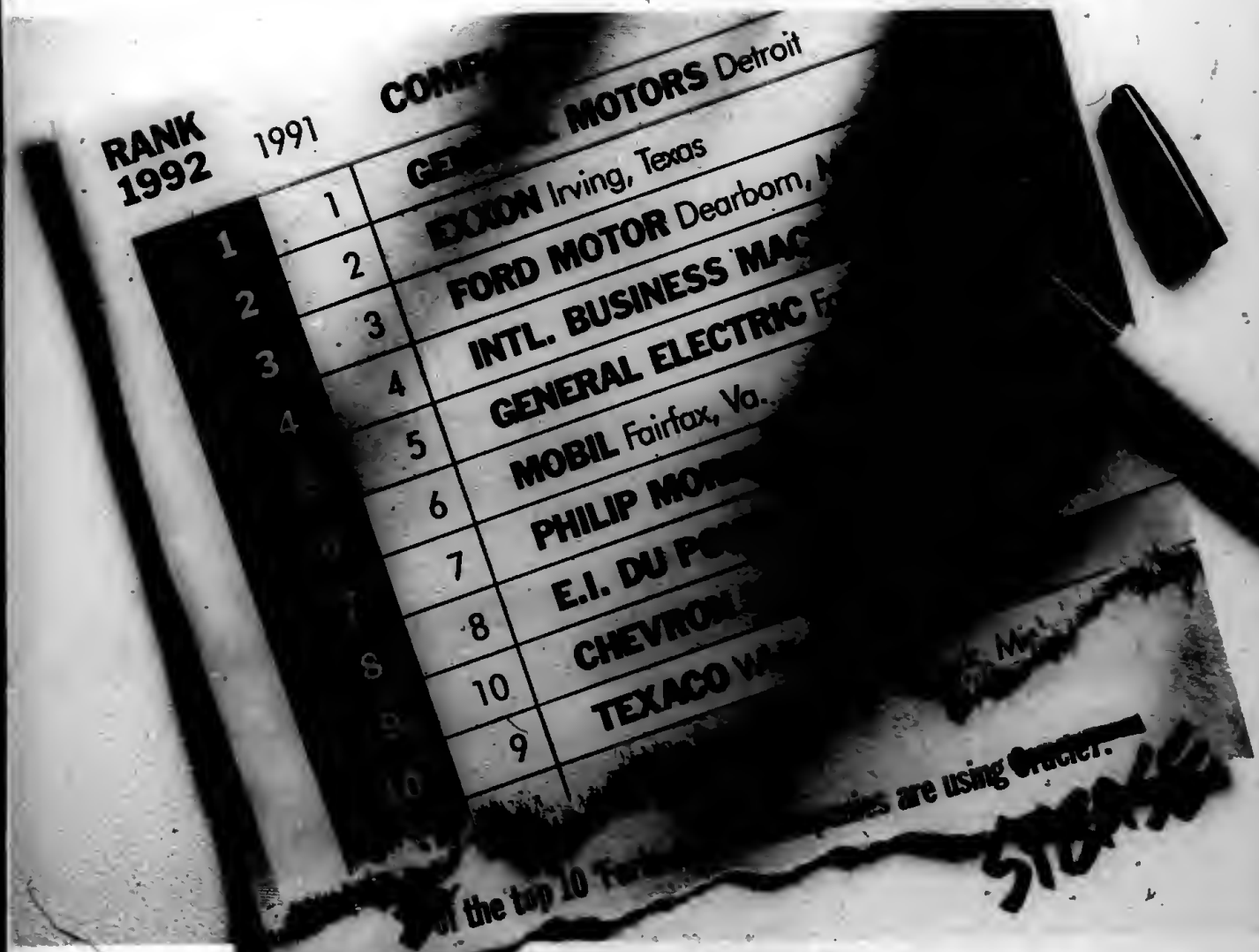

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Notes jockeys for role as development platform

By Lynda Radosevich

As part of an aggressive bid to shift Notes from a group conferencing application to a strategic development platform, Lotus Development Corp. last week introduced a substantially improved partners program and delivered key Notes application development capabilities.

However, while customers said the move will improve their ability to use Notes, users from a larger group of organizations interested in but not committed to Notes said the application is still far from meeting their needs.

"We're looking to organize materials from 50 years of investment lending so advisers can get it from their desktop. Notes is not there today," said McDonald Buck, principal information officer at The World Bank in Washington.

At PC Expo in New York last week, Lotus Senior Vice President of Development John Landry positioned Notes and the new tools as the means by which information systems can develop strategic systems to support business objectives such as marketing and sales.

Potential problems

But users and analysts cited the following roadblocks to strategic deployment:

- High software pricing/desktop hardware requirements.
- No migration path from installed systems.
- Inability to handle large amounts of electronic documents and images.
- Lack of support for standards and lack of standards for functions such as database replication.

Referring to Notes' proprietariness, Martin Waterhouse, a supervisor of end-user computing at Chevron Information Technology Co. in San Ramon, Calif., said, "We all know what happened to proprietary systems in the past with IBM. It's a dangerous situation to get yourself in."

Among the companies that have deployed Notes, many are using it for informal discussions and conferencing, not strategic applications.

For instance, in a Gartner Group, Inc. study of 200 large firms completed last month, roughly two-thirds of the companies using Notes said they use it for collaborative vs. strategic activities, analyst Tom Austin said.

Still, the new application development support will make it easier for committed users to use Notes as an underlying service for custom applications.

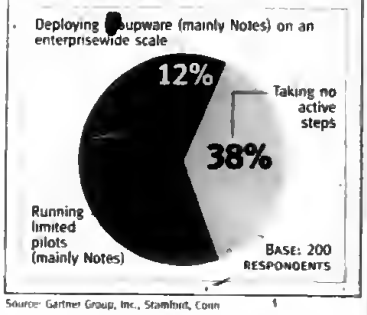
The announcements included the following:

- Notes VIP: A visual application development tool for Notes.
- Notes SQL: Drivers that connect Notes to Open Database Connectivity-compliant relational databases.
- A business partner program that gives developers access to Lotus' knowledge base (see story at left).

Application development options for Notes are underway. Page 68.

Significant but not strategic

WHAT ARE YOUR GROUPWARE PLANS?



Source: Gartner Group, Inc., Stamford, Conn.

Jumping the gun

In a move to consolidate its groupware lead before Microsoft Corp. and Novell, Inc. deliver on their proposed offerings, Lotus last week launched several programs designed to cement third-party and corporate developer relationships.

A new tool kit lets developers mimic Lotus-specific interface features such as SmartIcons and status bars. Another tool kit, provided on a CD, has several new Notes and CC:Mail application programming interfaces. A partner program that costs $495 includes the tool kit and CD and certifies Notes applications.

Meanwhile, users on the PC Expo show floor said the Notes VIP tool's strong points include LotusScript, a Basic-compatible language and tools that let users create charts and reports without exiting to other applications. A primary weakness is its cost: $995.

In a related move, Lotus said it is shipping Lotus Forms, an electronic forms design and filler package that can act as a front-end application to Notes.

Also, Lotus began shipping Notes Version 3.1, which includes a built-in customer support application, a multimedia training application and more network drivers.

— Lynda Radosevich

Xerox changes technology tack

By Julia King

Days after handing off its mainframe-based information systems operations to Electronic Data Systems Corp., Xerox Corp. is launching new information technologies at the $15 billion company. Last week's appointment of Larry K. Geisel to oversee all new application development is among its first moves.

As vice president of global application solutions, Geisel is charged with developing what he described as "a network-centric infrastructure with re-engineered applications."

The client/server-based systems will be built on a first-year development budget of about $30 million. A core team of 250 IS staffers and outside contractors will be involved, Geisel said.

Bucking the trend

In a twist on today's trend toward off-the-shelf solutions, the systems will also be "largely proprietary," Geisel said. "For strategic processes and core operating applications, our mission is to build world-class systems."

Xerox's decision to develop proprietary systems may not have been made by choice, said Curt Monash, president of Monash Information Services, a New York software consultancy. "Truly enormous companies have needs that most packaged applications don't fulfill."

Once completed, Xerox's new systems will furnish its worldwide operations with a set of standardized, reusable objects to support five previously established key processes, including customer service and supply chain management, Geisel said.

Earlier this year, Xerox revamped its IS group to bring information officers at its nine divisions under corporate Chief Information Officer Patricia Wallington, paving the way for centralized systems development, he said.

Geisel said EDS, which officially took over Xerox's IS operations last Thursday under a deal estimated at $4.1 billion over 10 years, will continue to make "modest enhancements" to mainframe systems as key data is extracted and plugged into the newer systems as objects.

Geisel most recently served as director of systems and integration planning at The Analytical Sciences Corp.

EDA/SQL upgrade woos high, low ends

By Rosemary Cafasso
BOSTON

Information Builders, Inc. last week released a rebuilt and repackaged Enterprise Data Access/SQL (EDA/SQL), its data access software, in an effort to score more points with high-end users and bring in new low-end customers.

EDA/SQL Release 3, introduced here at Database and Client/Server World, was redesigned to boost performance so the software could move beyond primarily decision-support environments to transaction-heavy ones. Analysts said the revamp may impress high-end, transaction-oriented customers who had found EDA's performance sluggish.

To appeal to new customers just beginning migrations to client/server, Information Builders also repackaged EDA with Release 3 so that users can purchase individual back-end services instead of licensing the entire tool set.

What the change entails

As part of this change, Information Builders is offering software called Hub Server as one of the eight back ends. Hub Server will initially run on IBM mainframes. It functions as a mega-gateway by linking users to databases and managing the traffic from this central point.

Also, as Release 3 moves from a capacity- to a user-based model, it marks a switch in pricing strategies for the vendor. In some cases, the switch will cut prices nearly in half.

EDA/SQL was introduced three years ago as a data access tool and has built a customer base of about 600 sites worldwide. The software, now loosely defined as middleware, includes gateways to all major databases.

Hollis Miller, manager of integrated desktop services at BellSouth Telecommunications in Birmingham, Ala., is working with a beta version of Release 3.0's Hub Server. Miller said he is pleased with the software's performance so far, although it has occasional problems. He is using it to manage data access among Unix, IBM mainframe and NCR Corp. Teradata environments. "We wanted a single point of access for administrative and security purposes that would make [data access] transparent to end users because they have enough to worry about."

Because EDA addresses a number of data access functions, Information Builders competes with most gateway and database vendors. But with Release 3, analysts said the company is targeting Sybase, Inc. because the database company recently sharpened its heterogeneous data access strategy.

"It'll become a two-horse race between [Information Builders] and Sybase" in the client/server middleware market, said Barry Wilderman, an analyst at Meta Group, Inc. in Westport, Conn.

AT&T licenses OpenView for integrated net management scheme

By Steve Moore

AT&T Corp. last week announced it will license Hewlett-Packard Co.'s OpenView network management system, incorporating it into a forthcoming set of integrated network management products and services.

AT&T's OneVision Network Management Solutions line will aim at enabling AT&T and HP customers to integrate the management of all their computer systems and networks under one system.

AT&T and HP have agreed to establish a "common core" for the OpenView and AT&T BaseWorx network management platforms, but the specifics of this melding have yet to be defined.

New products and services related to OneVision will be rolled out gradually from now through 1996, beginning with applications specific to current AT&T networking equipment.

Some users welcomed promises of network management integration.

"I want [integrated network management] end to end, regardless of whether it's local, metropolitan or wide area," said Frank Belland, senior communications consultant at Martin Marietta Corp. in Orlando, Fla.

Aiming to please

AT&T's OneVision line aims to use HP and AT&T products to help users integrate the management of all their computer systems and networks.

Other users did not find such management integration appealing. "We do not have plans to manage the carrier side of our network," said the network manager at a leading information services provider. "We don't follow an integrated network and systems management model because there are a lot of differing opinions on that within our company."

Competitive edge

Users and analysts said AT&T and HP, as leaders in their respective markets, are better positioned to succeed in broad-based network management integration efforts than MCI Communications Corp. and SunSoft, Inc., which announced a similar strategy in March.

However, Chris Heckart, a senior consultant at Telechoice, Inc. in Verona, N.J., cautioned: "This comes on the heels of AT&T's other huge announcement with Novell. With all these irons in the fire, will AT&T get to the point where they have resource allocation problems?"

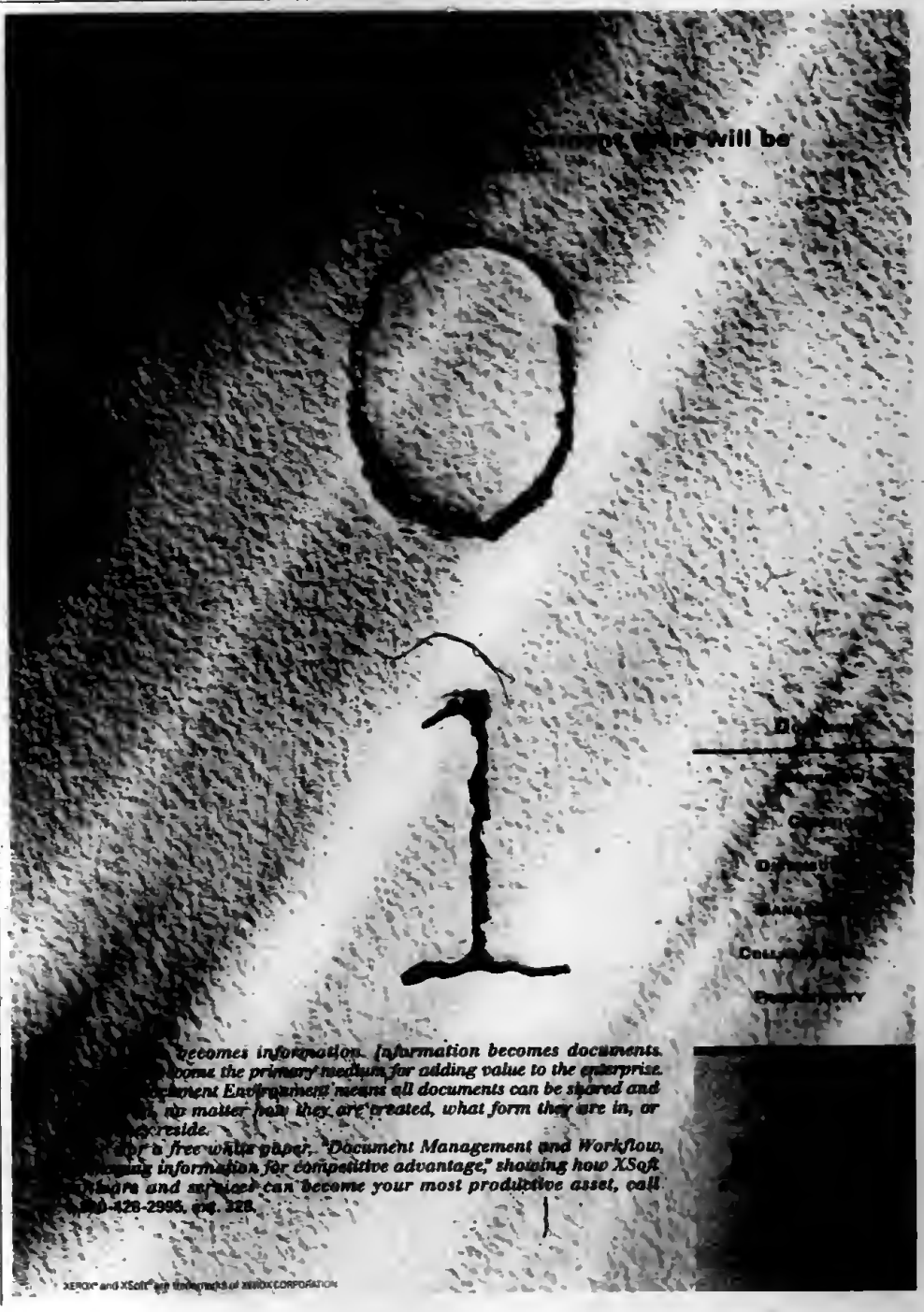
AT&T said its initial OneVision applications will let OpenView users manage AT&T data communications equipment and private branch exchanges. Other networking equipment vendors, including Cisco Systems, Inc. and Cabletron Systems, Inc., will make their management applications work in the OneVision scheme, according to AT&T.

OneVision will also provide network management outsourcing services based on AT&T's Accumaster Management Services.

"AT&T is trying to resurrect the Accumaster Management Services banner as an alternative to other outsourcing options available to customers today," said Jeffrey Kaplan, a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass.

Some users said they hope OneVision will eventually go beyond basic network monitoring and provide dynamic bandwidth management capabilities. An AT&T spokesperson said bandwidth management capabilities will vary depending on a user's service contract, and OneVision users can expect real-time bandwidth control by 1996.

"We've got some sites that don't require much bandwidth on a minute-by-minute basis, but periodically we have large file transfers," said Jerry Lavalley, director of technical services at Mary Kay Cosmetics, Inc. in Dallas. "I'd sure like to be able to go in and dynamically shoot the speed up, ship the data across and then bring it back down to idle mode."



IBM strategy for ATM switches into high gear

By Stephen P. Klett Jr.

■ Long criticized for its slow pace in adapting to the fast-moving internetworking market, IBM last week rolled out an ATM strategy aimed at pulling itself into the lead.

As expected, IBM took the wraps off a family of five Asynchronous Transfer Mode (ATM) switches, ranging from the low-end Nways Broadband Model 200 — designed to provide remote access to corporate ATM LANs — to the high-end Model 800, which will be aimed at the carrier industry when it ships in 1996 [CW, June 26].

"We've committed to ATM for the long term and brought price levels down to where users can implement it sooner than they thought. We haven't missed this one," said Robert Anderson, manager of marketing communications at IBM's Networking Systems division in Research Triangle Park, N.C. For example, IBM's prices start at roughly $1,000 per ATM connection, which is very competitive, analysts said.

A switch in time

IBM will try to fill every internetworking niche with an ATM switch

NWAYS BROADBAND SWITCH

MODEL	CAPACITY	AVAILABILITY	PRICE
200, 400	Up to 4.2G bit/sec.	End of year	$40,000
200	200M bit/sec.	Second half of '95	$20,000
700	25.6G bit/sec.	Second half of '95	$300,000

Gloves off

The computer giant also unveiled 25M and 100M bit/sec. Turboways adapter cards, a Turboways ATM Concentrator hub, a 3172 adapter that provides ATM-to-host connectivity, an ATM module for its 8260 switching hub and LAN emulation and management software (see chart).

While observers said it will take time to see whether ATM can vault IBM into a leadership position, some said the unveiling was the most aggressive and complete ATM migration strategy from a single vendor to date.

"IBM is taking its gloves off a little bit and is definitely becoming more competitive in the whole internetworking arena," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington.

Dzubeck and other observers said IBM must be credited for attempting to deliver every piece users need to implement an ATM network. To date, most companies — with the exception of Newbridge Networks, Inc. in Herndon, Va. — offer only one piece of the ATM puzzle, such as an ATM workgroup switch or adapter card.

Users praised the breadth of IBM's rollout, but some questioned IBM's efforts to push 25M bit/sec. ATM products, especially in light of the ATM Forum's rejection of a 25M bit/sec. ATM standard. Instead, the forum chose a 51M bit/sec. standard.

"We wouldn't even entertain 25M bit/sec. ATM," said Matt Jacoby, a senior network analyst at Norwest Mortgage in Minneapolis, which has a 16M bit/sec. Token Ring network feeding off a Fiber Distributed Data Interface backbone. "It's simply not a big enough step in performance to justify swapping out all our adapter cards."

The Turboways ATM Concentrator is shipping now at a starting price of $3,995 for eight ports. The Turboways 25M bit/sec. adapter is also available now for $405, including LAN emulation software.

Internetworking product purchases. See page 103.

Wireless has wild week

Mergers and alliances could reduce prices

By Michael Fitzgerald and Ellis Booker

The merger of Bell Atlantic Corp.'s and Nynex Corp.'s cellular services capped a watershed week that promises to clear away much of the confusion in the wireless communications market.

If approved, as the companies expect by the second quarter of 1995, the merger will potentially lead to a third national wireless network to compete against the proposed AT&T/McCaw Cellular Communications Corp. network and an MCI Communications Corp./Nextel, Inc. effort.

Analysts said they expect to see the increased competition drive prices on wireless services lower, perhaps by as much as 40%.

Other developments on the wireless frontier last week included the following:

- The Federal Communications Commission released its auction guidelines for Personal Communications Services (PCS), a wireless protocol expected to bring extensive voice and data services at mass market prices that vastly undercut today's cellular prices. The guidelines mean the FCC is poised to auction off the spectrum before the end of the year, letting the expected 18-month build-out of a PCS infrastructure begin.
- Some 57 Cellular Digital Packet Data (CDPD) vendors aligned with the CDPD Forum, an industry association designed to improve communications among equipment makers and service providers and get the protocol to market faster. First on the group's agenda are interoperability tests among various CDPD carriers, starting Aug. 1.

It is likely to be another two years before the effects of this week's events will bring benefits to users, according to officials.

Filling the gaps

Before the Bell Atlantic/Nynex announcement, cellular and PCS were seen as major competitors for both voice and data traffic. Analysts had pointed to the FCC decision to provide only regional and local licenses for PCS as a major flaw in the new protocol.

Now, however, industry observers said they see room for cellular carriers to pick up PCS licenses in regions where they do not have cellular licenses, thus plugging holes in their coverage.

The possibility of lower wireless prices had users ready, willing and able to hurry up and wait.

"That's great. Maybe we can get something started," said Sam Nash, a telecommunications manager at Associated Grocers, Inc. in Seattle. Nash said he would like to give his remote notebook users wireless communications for electronic mail and other information, but "right now, rates are prohibitive."

Nash said rates would have to drop more than 50%, from the current 33 cents per minute to less than 15 cents per minute, "for me to even think real hard about" cellular.

Objects

CONTINUED FROM PAGE 1

rent license?" Allen asked.

While customers maintain they will continue buying the OLE 2.0-compliant applications that their end users want, they are voicing their chagrin over how these components — or objects pulled out of other applications — will be licensed. Furthermore, they want to know how they will remain in compliance with distributed and integrated objects when they are finding it nearly impossible to get in compliance today.

Indeed, users said they find vendors' multitiered licensing structures complex enough already. LAN-based license monitoring products now on the market cannot keep up with objects or applications that will be distributed over multiprocessors, they pointed out.

"What if I'm in a file server environment doing concurrent licensing, scrolling through a document, and all of a sudden all my Excel licenses are used up?" asked Ki Wilson, senior microcomputer analyst at Stone Container Corp. in Chicago. "Do I now get a blank page? Do I get a big box that looks like a spreadsheet with an X in it?"

So far, the vendor community and representatives such as the Software Publishers Association (SPA) have no answers to offer.

All of the major vendors have been encouraging third-party developers and users to build applets such as Visio that will plug into their suites. Users like this concept for its potential to reduce system resource requirements.

Furthermore, applets such as the Visio graphics application cost less than a full-blown application. The software package Visio 2.0, for example, sells for $129. The object version of the application, called Visio Express, which can plug into Microsoft's Office and Lotus' SmartSuite, costs $49.

By piggybacking its object version on major suites, this business model works well for a small software vendor such as ShapeWare.

However, major software vendors do not have the same incentive to break their applications into low-cost objects.

"The technology is an easier equation to solve than the business model," said Glen Mella, vice president of marketing at WordPerfect. Mella said WordPerfect does not know how it will handle component licensing or pricing with its suites.

Novell is also struggling with the concept. It has encouraged users to contribute objects called AppWare Loadable Modules to its AppWare library, where users can access them. However, more than a year later, Novell still has not determined a licensing or royalty policy for these corporate-developed application loadable modules.

The SPA estimates that illegally copied software cost software vendors more than $7.4 billion in 1993.

Industry groups are just beginning to grapple with the subject of object licensing. Later this month, the Desktop Management Task Force will launch a group — co-chaired by officials from Microsoft and Novell — to examine the subject of object licensing. Meanwhile, the Society for Information Management will touch on the subject at its annual meeting this September in Salt Lake City, according to officials from the group.

"The set of tools required to do this great new stuff and still be compliant just has not matured yet," said Claudia Colbert, vice president of asset management at The Chase Manhattan Bank NA in New York.

"The only thing I can think of using today is what is practical and what works," said Robert Wisor, president of Robert E. Wisor & Associates in Hopewell Junction, N.Y. "The only thing I can think of is the honor system, and I don't think too many vendors would be happy with that."

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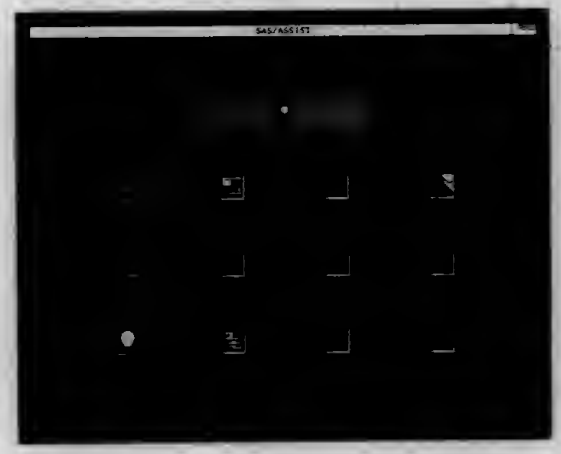

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Overhaul may end telco monopolies

By Mitch Betts
WASHINGTON

The U.S. House of Representatives last week approved a sweeping overhaul of the nation's 58-year-old telecommunications law, in part by opening local telephone networks to the same kind of price and service competition users have enjoyed in the long-distance market.

Corporate user representatives welcomed the long-awaited action, but observers said there was only a 50/50 chance the Senate can pass its version in time for enactment this year.

"By and large, the large user community thinks it's time for the Communications Act of 1934 to be rewritten and, on balance, the provisions in these bills will help" users, said Henry D. Levine, a Washington-based attorney representing many corporate users.

The House passed two complementary bills, one of which attempts to put an end to the near-monopoly of local telephone companies by allowing the cable TV industry to offer telephone service. It also requires the telephone companies to give other competitors equal access to their essential facilities.

The measure gives competitors such as MFS Communications Co. and Teleport Communications Group, which is owned by several cable TV firms, the right to interconnect with Bell central offices at fair prices. The bill also requires the Bell telephone companies to unbundle their transmission, switching, access and transport services. That way, competitors can buy only the network functions they need.

The second bill rewrites the 1982 Consent Decree that broke up AT&T by allowing the regional Bell holding companies to enter the previously off-limits businesses of equipment manufacturing, information services and long-distance service. Initially, long-distance service would be limited to cellular phone, video, information services and in-state toll calls.

Some user groups are wary of allowing the Bell companies into the long-distance market while they still control local connections. Brian R. Moir, Washington counsel for the International Communications Association, said access to the long-distance market should be delayed until there is real competition in the local loop.

Hello, operator?

In the 1900s, local telephone markets had competition but not interconnection, resulting in office desks with five phones. Public dissatisfaction led to the creation of government-regulated telephone monopolies. Had the government required interconnection back then, local service might have been competitive all along.

Break up the market

Still, users want to see more competition in the long-distance market to break the oligopoly of AT&T Corp., MCI Communications Corp. and Sprint Corp., Levine said. "Prices in long distance have been going up lately, and the reason is that three companies have 90% of the market and they move in tandem," he said.

"There is a lot of controversy about how to resolve it, but one way may be to have the Bell companies enter that [long-distance] business with appropriate safeguards," Levine added.

The relevant Senate committee is expected later this month to take up the controversial issue. If the Senate passes its bill in August or September, then the different House and Senate versions must be reconciled before Congress adjourns for the fall elections.

But in a burst of optimism, Rep. Edward J. Markey (D-Mass.), chairman of the House telecommunications subcommittee, said there is a high likelihood of a White House signing ceremony on or about Oct. 15.

After a series of intricate compromises, the House bills passed overwhelmingly on votes of 423-5 and 423-4.

Paul Gillin applauds the action. See page 36.

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SGI expands 'low-cost' supercomputer line

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

Silicon Graphics, Inc. (SGI) said last week that it will add two entry-level models to its Power Challenge series of RISC-based supercomputers set to ship next month.

Using off-the-shelf, 64-bit MIPS R8000 RISC chips and workstation components, SGI plans to reduce the cost of supercomputing — a market once dominated by bulky vector-processor machines priced from $2 million to $30 million.

But Power Challenge, priced up to $800,000, will face stiff competition from massively parallel processor (MPP) machines such as Cray Research, Inc.'s T3D, which is also built on mass-produced RISC chips, industry analysts said.

Users have ordered hundreds of the Power Challenge machines but still await delivery, some 18 months after they were announced, SGI officials admitted.

Paul Koontz, director of SGI's supercomputing division, said the two new models — the $35,000 Power Challenge M uniprocessor and the $65,000 Power Challenge L uniprocessor — will cap off a long-awaited line of high-performance RISC machines that can tackle supercomputer-class computer problems. The low-end models are intended to seed a high-end SGI user base in automobile, aerospace and other industries that find traditional supercomputers too expensive to maintain, Koontz said.

"Right now, SGI's R8000 chip is king of the hill," said Rich Partridge, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "But others will certainly leapfrog them over time."

The chip was designed by SGI's subsidiary, Mips Technologies, Inc., and produced by Toshiba Corp. Meanwhile, Partridge said, traditional vector-processing supercomputers will be surpassed by new MPP machines such as Cray's T3D array.

The Power Challenge line, announced in January 1993, was delayed for several months by the chip's late arrival, analysts said. SGI was able to persuade many to wait for delivery by demonstrating clusters of Power Challenge systems tackling some of the most complex scientific problems, said Gary Smaby, president of the Smaby Group, a consultancy in Minneapolis.

Shipping out

SGI shipped 28,900 workstations last year and 5,500 multiuser Unix servers, according to Computer Intelligence/InfoCorp in La Jolla, Calif. Revenue for SGI's workstation sales were $713 million, compared with $273 million for the multiuser system sales.

Machines at work

One such demonstration was held in Houston this month using an array of 200 R4400-based Power Challenge machines. "We were able to take an imaging problem that generally takes three to four weeks to run and just turned it around overnight," said Dwight Sukup, a senior research associate at Texaco Corp.'s Exploration Production Technology Division in Houston. Sukup's group uses an eight-way R4400 SGI Challenge machine to create images from seismic data but hopes to upgrade to the new system.

The National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign has ordered a 16-way SGI Power Challenge to replace an aging four-processor Cray Y-MP supercomputer. If the initial SGI installation goes well, plans call for the center to move to a Power Challenge array in 1995.

Center director Larry Smarr said he expects delivery in early September. He will return the center's leased Cray Y-MP machine shortly thereafter.

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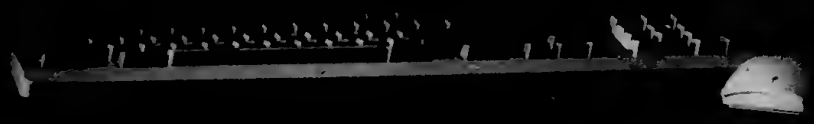

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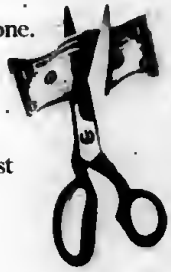

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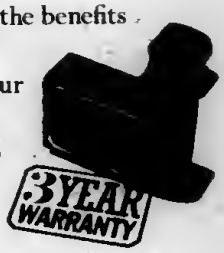

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IBM shows Workplace OS for handhelds

By Michael Fitzgerald

■ IBM chose a recent Taiwan trade show to offer the first glimpse of its version of Workplace OS for handheld systems.

The new software indicates that IBM wants to play in every operating system market to counter the Microsoft Corp./Intel Corp. market hegemony. For example, Workplace OS' planned scalability from handheld to mainframe could speed the deployment of networks that allow users to integrate information from a variety of platforms.

The new operating system, which sources said is code-named Embedded Operating System (EOS), will be positioned as the low-end version of Workplace OS, according to Michael French, an analyst at Link Resources, Inc. in New York.

Shipping soon

French, who attended the Taiwan personal digital assistant (PDA) show last month, said IBM representatives described EOS as a 32-bit operating system based on the Workplace OS microkernel. It was designed to run on both PowerPC and Intel systems.

A beta version of EOS is scheduled to ship in the mid-to-late second half of this year, with the final product shipping early next year, sources close to IBM said.

Representatives of IBM's Personal Software Products division also made the rounds to Taiwanese vendors, looking to drum up support for the forthcoming operating system, according to sources close to the vendors.

EOS and potential subsets will target both handhelds and embedded operating systems, which typically are customized systems developed for automobiles, industrial machinery and other vertical markets.

An IBM spokesman declined to comment on specific facets of EOS but said that "embedded operating systems and handheld devices are strategic to IBM."

Spreading its wings

The spokesman added that "we will be branching subsets of our mainstream [operating system] into other markets," as part of IBM Chairman Louis V. Gerstner's program to locate new revenue sources.

French said IBM is stressing its ability to handle "real-time data types such as voice, images and video, and it's very communications-oriented."

He added that "their pitch was that the existing [handheld] software such as WinPad isn't adequate for heavy-duty communications."

WinPad, still under development, is an extension of Microsoft's At Work software. WinPad is expected to have a built-in facility to synchronize files. It will initially be oriented largely toward letting handheld users access files on their desktop computers.

Despite the effort to slam WinPad, other sources near IBM said the company plans to use WinPad as well.

Three mainstream PDA operating systems are already on the market: Apple Computer, Inc.'s Newt OS, General Magic Corp.'s MagicCap and GeoWorks' GeoWorks. General Magic has also billed itself as a communications-focused operating system provider.

While the handheld market has to date fallen so far short of its hype that users find it difficult to assess potential products [CW, June 13], one user contacted said the EOS' promised ability to handle multimedia data types was intriguing.

That's entertainment

"That would have a lot of value," said Edward N. Altman, vice president of MIS at MGM in Santa Monica, Calif. He wants to give MGM users handheld devices with wireless communications to improve their flow of information during deal making. "What if we wanted to download a picture or a resume" to a remote user? he asked. "Those are things you could do that entertainment people would put value in."

MGM's Edward N. Altman *wants to give users handheld devices to improve their flow of information*

Altman also said that artists might use such a device to send samples to clients and get feedback.

It is not clear what specific hardware units EOS will run on. IBM PC Co. officials said earlier this year they could ship one or more PDAs in 1994. However, the company has recently said they would not ship PDAs this year because the communications and software infrastructures will not be ready.

Similarly, the Taiwanese are interested in the PDA market because it has no established standard and presents an opportunity for them to help forge one.

While IBM strategically needs a handheld operating system for its PowerPC hardware strategy, analysts were largely skeptical of its market potential.

Future problems

Jeffrey Henning, an analyst at BIS Strategic Decisions, said the sketchy information indicates that IBM will have the same size problems as WinPad, which sources say needs 6.5M bytes of read-only memory to run. IBM's target for the EOS is to fit in 4M bytes of ROM and 2M bytes of RAM.

But Henning noted that the dual-platform strategy may be a strategic differentiator for IBM, as it would be the first handheld operating system to market that supports more than one chip.

Users take integration into their own hands

By Mark Hulper

A recent spate of service moves by computer vendors has refocused the spotlight on an old question about product objectivity, and users are increasingly providing a brash new answer: "I'd rather do it myself."

Emboldened by advances in open technology, users are taking integration chores into their own hands rather than making the classic choice between ostensibly bias-free solutions from third-party integrators or brand-wedded offerings from the likes of IBM and Hewlett-Packard Co.

"We roll our own here," boasted Matt Ghourdjian, national director of technology at Howrey & Simon, a Los Angeles-based law firm heavily vested in Apple Computer, Inc. desktops and various Unix servers. "It's getting easier to do. Products are shrink-wrapped. Software is becoming a commodity like everything else."

PED Manufacturing's Dave Howell: *'We don't need [integrators] here'*

And cheaper, too

What's more, doing it yourself can save money. "It saves us an extraordinary amount of money," said Ghourdjian, who designed and implemented a network on his own. "The lowest bid we got for the design was a quarter-million dollars."

Dave Howell, MIS director at PED Manufacturing Ltd., an artificial joint manufacturer in Oregon City, voiced similar sentiments toward integrators — whether they were third parties or vendors.

"We don't need them here," said Howell, who is moving PED out of a proprietary environment and onto Microsoft Corp.'s Windows NT, which is currently running on Sequent Computer Systems, Inc. machines. "Anybody can set up a network nowadays."

By keeping integration in-house, users are also saving money. Portland Community College in Oregon, for instance, is saving as much as 30% by sharing integration responsibilities with HP and other contractors on a high-speed multimedia networking project.

Sam Ellis, the college's associate vice president of information services, said that while the college assigned HP as project coordinator, it did not legally designate HP as a "prime" contractor. Portland Community College is avoiding a premium that HP would otherwise have charged to carry risk associated with prime status.

A challenge to vendors

User confidence comes as challenging news to vendors, which in recent weeks have been ratcheting up their services activities to try to offset shrinking product margins. All within the past month, IBM went to court to abolish a 38-year-old antitrust agreement that competitors hope will tie its service hands; HP assigned 4,000 employees to a newly formed solutions integration group; and Sequent launched a group to provide messaging services.

Some users, such as US West Marketing Resource Group, Inc., the Omaha-based publishing and marketing arm of US West, said there are some projects that they are better off doing themselves because they know their needs and systems nuances better than anyone.

"We have a very large, complicated WAN, and we really don't trust other people, quite frankly," said Phillip Corchary, the company's network systems analyst. "And with user interfaces, we know what we want, and we have the expertise."

Ghourdjian agreed. "You should know your own requirements better than anyone else. You ask a consultant to come in, and he's got to learn your business," he said.

Corchary said he does tap outside help in some areas, such as "putting all the pieces together for the back end" — including application servers and relational database systems. In those cases, he said he would not hesitate to use a vendor's service because "they probably know the hardware and software better than anyone else."

But not all users seem so eager to share vendors' heightened enthusiasm for providing integration services.

"I have a hard time getting past my instincts to not believe vendors when they come in the door and tell me they sell solutions, not hardware," said Bob Kreinberg, vice president of operations at Nike, Inc. in Beaverton, Ore.

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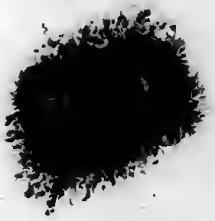

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Briefs

Lotus revamps deal

Responding to a dramatic slide in its stock price last week, Lotus Development Corp. restructured its agreement to purchase SoftSwitch, Inc. so that it will pay $62 million in cash rather than 1.3 million shares of Lotus stock. The purchase price is lower than the original $64 million to $73 million estimated value of the 1.3 million shares when the deal was announced June 16. Because of the change, Lotus expects a second-quarter loss.

Progress shows gain

Progress Software Corp. last week reported a $6.6 million profit for the first half of fiscal 1994, ended May 31, up from $5.9 million for the same period last year. Sales rose from $51.7 million to $65 million in the period.

Novell caps merger

Novell, Inc. and WordPerfect Corp. completed their merger and the acquisition of Borland International, Inc.'s Quattro Pro spreadsheet last week. The WordPerfect and Quattro Pro businesses have been melded into the WordPerfect/Novell Applications Group, headed up by WordPerfect Chief Executive Officer Ad Rietveld.

Iomega slims down

Iomega Corp. last week cut its work force by 75 positions — accounting for 15% of its indirect work force and $4 million in annual overhead. The reduction was accounted for in last year's restructuring costs.

SHORT TAKES Safety Software, Inc. has filed suit to stop Claris Corp. from selling, advertising and marketing Safety Suite software, saying it infringes on the Safety Office Suite trademark. . . . Microsoft Corp. acquired Softimage, Inc., a developer of high-performance two- and three-dimensional computer animation software.

Acer gambles on splitting up

Taiwan PC king plans to break into 21 public units

By Michael Fitzgerald
TAIPEI, TAIWAN

Acer, Inc. has become the largest PC maker in Taiwan and the first Taiwanese company to crack the U.S. market's Top 10 this decade. It has even established a modest brand-name presence in the U.S.

Why, then, has it decided to break itself up?

For starters, the move will give employees a stake in their companies, which ideally will motivate them to work harder. In theory, this would improve return on equity, which has been flat for the past five years, and give business units better access to cheap capital.

Lofty goals

Acer expects to post sales of $6.35 billion in the first half of 1994 based on 75% growth worldwide, 70% in the U.S. The company says it is on target to hit $2.8 billion in sales this year. Acer aims to become one of the Top 3 PC makers in the world by the turn of the century.

It may also lower turnover at Acer, which tends to lose people who want to start their own businesses more often than other, family-dominated Taiwanese firms.

Plan for the future

Under Acer's 21-in-21 plan — 21 public companies by the 21st century — Acer will start spinning off units later this year, beginning with Acer Peripherals, Inc. and Acer Sertek, Inc., a distributor. Computec De Mexico, its market-leading joint venture in Mexico, will go public next year, followed by Acer America Corp. in 1996. Other spin-offs are slated for 1996 and beyond.

Trail blazer

Several factors differentiate Acer from other Taiwanese companies: the fact that its founder, Stan Shih, still controls the company after 18 years; its frequent turnover of personnel; and its plan to spin off its units into public companies.

The reasoning behind this strategy is simple, said Stan Shih, Acer's chairman and chief executive officer.

"I would rather be the head of the chicken than the tail of the cow," Shih said. "I'm one of 5,000 in a big group, one of 500 in a small unit — so I can have much greater impact in a small group."

The strategy may improve Acer's presence in its regional markets. For instance, while Acer is the best-known Taiwanese PC maker in the U.S., its brand presence is still weak because it relies mostly on the fickle retail channel, analysts said. And it has not done well in higher-margin businesses, such as servers.

Will it work?

U.S. observers said the move might be a practical one, though few expect that all 21 units will attract investors.

"It'll be really interesting . . . to see how investors react to the kind of hybrid model that Acer is bringing to the marketplace," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. He pointed out that Acer will spin off units that make practically every PC component but that it wants to continue to control the general content of its PCs. So it is trying to shift from being a highly integrated company to a decentralized one — while still maintaining control of its production process.

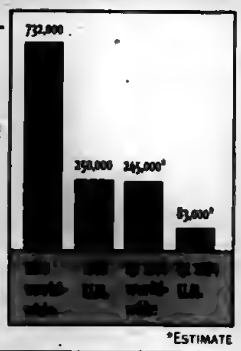
But the plan may break down if Acer's units become too independent. For instance, at meetings here recently Acer America officials pointed out that they are not obligated to buy their products from Acer. But they stopped short of suggesting they might abandon their potential "parent" in any significant way.

Acer has already worked to decentralize itself, locating at least one manufacturing plant in each region of the world where it does business.

This is partly why Acer has been able to establish itself in the U.S., analysts said.

Gaining share

Acer's first-quarter shipments placed it at No. 10 in the U.S. PC market and No. 8 worldwide



Source: International Data Corp., Framingham, Mass.

EDS wins fight with one Texas bank, faces another

By Mark Halper

Electronic Data Systems Corp. has won a decision against one small Texas bank but still faces charges from another alleging that the outsourcer did not provide promised services.

A jury in Hidalgo County State Court in McAllen, Texas, ruled EDS did not commit fraud or fail to comply with its data processing agreement with Texas State Bank as charged [CW, May 30].

The bank was ordered to pay EDS $500,000 for interfering with the outsourcer's attempts to do business with two other banks that merged with Texas State Bank.

Further action weighed

George Carruthers, Texas State Bank's chief financial officer, said the bank's attorneys are deciding whether to appeal the decision. He declined to comment on the ruling except to say, "Naturally we're disappointed."

The mood was different in the victor's locker room. "We said all along the case had no merit, and the jury has validated that," an EDS spokesman said last week.

Next up . . .

The ruling should clear the way for a similar suit by First National Bank of Edinburg to proceed to trial, said Bruce Bierhan, a partner at Boston-based law firm Jager, Smith, Stetler & Arata, which is advising the bank.

Motivation

First National Bank of Edinburg said it withheld payments from EDS in an effort to encourage EDS to resolve alleged service shortcomings.

In a suit filed in the same court, First National in Edinburg, Texas, alleges EDS overburdened the bank's data processing system after EDS took over operations from Mtech Corp. in 1989. The bank also claims EDS failed to provide daily account balance information in a timely manner. It seeks unspecified damages. EDS acquired Mtech in 1988.

EDS and First National parted ways in 1992. Both First National and Texas State Bank replaced EDS and its Mtech system with an integrated banking system from Integrated Technology, Inc. in Lincoln, Neb.

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Free the Bells

Independence Day seems like a good time to pay tribute to the U.S. House of Representatives for moving decisively last week to free telecommunications users from the tyranny of monopoly (see page 20).

If signed into law, the landmark legislation would greatly loosen restrictions on competition in the local loop. It would also clear the way for a raft of new players to enter the market for long-distance data and video services. The bottom line for users will be greater choice, lower costs and the chance to choose from a variety of more innovative services.

But don't breathe easy just yet, because passage of the bills will demonstrate once and for all that "superhighway" is a lousy metaphor for what the national telecommunications structure will look like for the next several years.

The jumble of services that will emerge from telephone deregulation will be full of half-completed on-ramps, multitiered cloverleaves and roads that go nowhere. It's going to be a weird, wild, wonderful process building this thing, but it's not going to be pretty.

Assuming that local service providers, long-distance companies, cable companies and even utilities are eventually allowed to compete in all major markets, we can hope that the predictable deregulation sequence will occur. There will be five years or so of chaos, during which the players will choose sides and beat one another bloody. The big losers will be users, who will have to make choices based on many more factors with a much higher degree of risk.

Following that, a period of calm will ensue, during which the market victors will count their winnings and user holdouts will make safe choices. The losers, naturally, will be those who don't win.

Then comes the payoff: While the winners provide enough competition to keep one another honest, a basketful of new, smaller competitors will enter the market, feeding off the leftovers that the big guys ignore. There will be no losers because users will be able to make safe choices and still enjoy the innovation that competition fosters.

That's the ideal scenario, at least. The one big variable is government. The role of the regulators in this process should be to ensure that the ground rules are fair and well-understood and then to get out of the way. Partial deregulation, like that accorded the cable television industry, will lead to price gouging and the need for government to reassert control.

In overwhelmingly passing two deregulation bills last week, the House showed unanimity and decisiveness. Let's hope the Senate does the same in moving the legislation to the president's desk by the fall. It's time to get on with building this national network, no matter how messy its construction might be.

Paul Gillin, *Editor*
Internet: *pgillin@cw.com*

Already here

"Outlook: PowerPC clone market" [CW, June 6] states, "Later this year, IBM will introduce its first PowerPC machine . . ." In fact, IBM has several models of the RISC System/6000 available today with PowerPC 601 CPUs.

The first system, the Model 250, was announced in September 1993 and began shipment shortly thereafter. In early 1994, IBM introduced the N40, a notebook system. In May, IBM announced two more models, the 41W/41T workstations and the C10 server. All of these PowerPC-based RS/6000s run AIX.

Robert Stackowiak
Chicago

'Understandability' not in the language

I found Jerry Sitner's "Choose Cobol, not C, for understandable coding" [CW, May 30] very amusing. I have been programming for years using Cobol85 and C, Cobol85 and C on a Tandem mainframe and C in DOS and OS/2. My programming time for both languages is usually divided 50/50.

To quote Sitner, "Clearly understandable coding is the key to programming quality . . . the results of such a comparison would be overwhelmingly in favor of Cobol." That is comparing apples to oranges. Of course Cobol is more clearly understandable; it is *English-like*. Ever heard of a technique called /* Comments */?

He says, "Cobol is the most conducive to coding understandability." Give me a break. In the real world, "coding understandability" is directly related to the programmer's knowledge of the language and experience with it, not the language itself.

Quality programming in no way stems from the language in which a program is written. I love programming in Cobol and in C and am extremely productive using either. I choose the language for a project or program based on which one can best get the job done, not whether my mom can read my code dump.

Scott Vassar
Omaha

It doesn't compute

Patricia B. Seybold must have been using some kind of new math in "Replace waterfall method with workflow method" [CW, May 23].

She characterized the workflow method of application development as being "deployed sooner" and "less costly to maintain." But the real-world example cited delivered "a substantially new and improved version of the system each year for three years." How do three rewrites constitute speedier deployment or lower maintenance costs?

Rapid deployment methodologies, whether workflow, CASE tool or even 4GLs, inherently carry the same risk. In their pursuit of raw speed, they risk solving vast problems with only half-vast solutions.

Matthew Conescu
Atlanta

Job titles need re-engineering

Regarding "Engineers to IS; Drop that title!" [CW, May 30], what I want to know is, what are all those registered engineers going to do about the smell after they've disposed of all the garbage collectors ("sanitation engineers")?

Douglas Wooster
Columbus, Ohio

I have just started setting up job descriptions for the people in our shop. When I went to the library to look for examples I was directed to the Dictonary of Occupational Titles published by the U.S. Department of Labor. In it I found "030.062-010 Software Engineer," along with a very reasonable description.

I know that any federal law or regulation supersedes a state law. Wouldn't the Labor Department's use of this title override state laws prohibiting its use?

Brent Milton
Memphis

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Redefining open systems

George Shaffner

The definition of open systems, which generally boils down to "portable, interoperable and adhering to international standards," has always worked well — for the user community. But ever since it was first brought down from the mountain, it has been under constant revision — by the vendor community.

The definition frightens vendors because it implies that the logical destination of open systems is a pure commodity environment where all product differentiation is eliminated.

A pure commodity software destination is hazardous to the health of both users and vendors.

In truth, a pure commodity software destination is hazardous to the health of both users and vendors. Once vendors have no product differentiation, research and development comes to a dead stop. There is no profit motive and no investment. The industry as we know it dies.

But if we prefer a vibrant, innovative and competitive industry, we need to motivate those free market scalawags — the vendors — to invest in product differentiation.

Let's change the definition to "Open systems are products in which low-value differentiation has been voluntarily eliminated by consensus."

There are several important implications in this definition. They include the following:

- Only low-value differentiation has been eliminated. This lets vendors continue to invest in high-value product features with the prospect of reasonable return on investment.
- When the value of portability or interoperability (commonality) exceeds the value of differentiation (uniqueness), then the feature should be deemed as having low value and is a candidate for standardization.
- Because all differentiation is voluntarily eliminated, any vendor retains the right to a difference of opinion.
- Users may disagree with a vendor that unreasonably extends differentiation by awarding more sales to more standard competitors.

Vendors will, of course, tend to maintain proprietary features up to the exact point in the product life cycle when they can sell more products by conforming to industry specifications. In other words, the vendor's actions are perfectly rational in a free market.

Instead of a dead software market, we can have one in which both users and vendors benefit in perpetuity. Users win because low-value differentiation is eliminated without destroying product development. Thus, new products and features continuously enter the market. But as they converge, there is motive for vendors to remove any barriers to portability and interoperability. This motive is sales.

Vendors win because return on R&D is protected, but only as long as any new feature has a value greater than that of portability and interoperability. Vendors can, therefore, focus their R&D on those features with the highest differentiation.

Feature-based definitions of open systems don't protect high-value product differentiation. It is too easy to construe the old meanings so that all differentiation is eliminated in favor of "pure" portability and interoperability.

Pure portability and interoperability can exist under two conditions: Pure monopoly, which is prohibited by law, and a dead market, which is not prohibited. Even though a dead market is not prohibited, we should not aspire to one. Let's change the definition.

Shaffner is former chief operating officer at X/Open Co. and is now an independent consultant in Fairfax Station, Va.

CIOs: The chosen elite?

Paul A. Strassmann

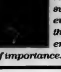
In the incessant competition for privilege, ambitious groups will seek legitimacy by declaring themselves an elite that deserves an exclusive position. The most ancient authority for such claims were religious figures or descendants from royalty. Later, when the number of aspiring claimants to special status grew, national, racial, tribal or political reasons were substituted for the divine origin.

The rise of democracy made special entitlements increasingly hard to explain. That is how we get claims to special privilege based on professional qualifications. Lawyers, physicians, psychiatrists, auditors and judges have secured a special status. It was only a matter of time before senior computer executives — the aspirants to the leadership of the information-based society — would ask for greater power. That is when the chief information officer title was conceived.

The original proponents of the CIO role argued that the CIO ought to take a position equivalent to the executive they envied the most, the chief financial officer. The chief financial officer was successfully entrenched as perhaps the most powerful counselor to the Supreme Being (the chief executive officer).

It took less than five years for establishments to cater to the self-enhancement of the image of the CIO. Magazines, glossy journals, symposia, surveys and exclusive clubs came along to convey to the self-chosen few a sense that they were indeed the chosen elite. CIOs paid large fees to attend evangelical meetings such as Michael Hammer's popular forums.

Hammer articulated his point of view perhaps more effectively than anyone else: "The chief MIS executives must lead the reorganization of their companies, creating new corporate structures and innovative ways of doing business. . . . The information systems executives' mission is to transform and redeem stagnant businesses and become agents of corporate innovation."



I do not find the decapitation rate of CIOs as sufficient evidence that they may not enjoy positions of importance.

The visionaries who gave the CIO the role of the CEO's chief innovation agent now find it difficult to make the reality fit the prophecies. Surveys show that CIO turnover is closer to that of captains of mercenary troops than to the longevity of a trusted lord of the council. However, I do not find the decapitation rate of CIOs as sufficient evidence that they may not enjoy positions of importance. Even the survival rate of CEOs isn't what it used to be.

It just happens that the 1993 *Computerworld* survey of the Premier 100 companies included questions about the reporting relationships of CIOs. The extent to which CIOs were indeed the chosen elite would become evident if they were reporting directly to the CEO.

Only eight of 53 Premier 100 companies with measurable economic performance had the CIO report to the CEO. I also isolated the characteristics of 17 companies that enjoyed superior Information Productivity. Only one of those had the CIO report to the CEO.

These findings certainly don't mean CIOs are unimportant. The reporting relationships of CEOs suggest that the responsibility for guiding information management does not yet rank a position as one of the close confidants trusted to steer the enterprise's destiny.

Strassmann is a consultant in New Canaan, Conn., and author of The Business Value of Computers (1990) and The Politics of Information Management (1994).

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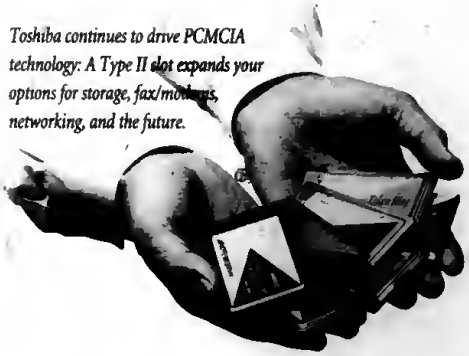

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PC databases

DBase for Windows adds programming tools

By William Brandel

■ Borland International, Inc. formally announced last week its long-awaited dBase for Windows application.

In addition to true Windows compatibility, the database includes object-oriented dBase extensions, a scalable database engine and object-oriented development tools.

However, the big boon to dBase programmers is the new Two-Way-Tools feature, which enables programmers to make changes in one code form and have the change reflected in the other. For example, if a change is made in visual code, it is interpreted and presented accordingly in the dBase source code.

"The Two-Way-Tools alone justify the upgrade," said Terence Crow, a corporate user at a company in Reynoldsburg, Ohio, that he asked be unnamed.

"For a developer, the Two-Way-Tools is a major convenience," said Keith Chuvala, a consultant in Winfield, Kan. "You don't have to go back and duplicate your efforts, and nothing gets lost in translation. Now you can make changes in both environments in real time."

Borland officials said the product will be available before the end of summer. It is being offered at an upgrade price of $199. The stand-alone price is $350.

Links expected

Borland will also make available its SQL Links for Windows. These drivers, which will ship separately from the database, will give users the ability to connect to back-end database servers from Oracle Corp. and Informix Software, Inc. and to Sybase, Inc./Microsoft Corp.'s SQL Server. The drivers are free and will be available when the database ships.

The compiler for dBase for Windows will be available 60 to 90 days after the product ships, said Dave Watkins, vice president and general manager of Borland's dBase business unit. Watkins said the product would also be backward-compatible with existing dBase files. However, the new product will present the old DOS-based applications in character mode.

With the Two-Way-Tools feature, *changes made in the visual code are reflected in dBase for Windows' source code*

Beta users said they are pleased with the Windows version of dBase. Their only request now is that Borland ship it.

"Like a lot of developers, I've been dying to take dBase into the Windows environment," said Chuvala, a dBase for Windows beta user who also has worked with Microsoft's FoxPro. He said the Borland product has better Windows controls and access to elements than does the Microsoft database.

"This one feels like a real Windows application," Chuvala said.

Visual navigation

DBase for Windows offers a plethora of new programming features. For example, the dBase Navigator gives developers the ability to visually manage files in one place.

Object Inspectors lets users view and modify dBase window, tool and object properties. Object-oriented programming extensions and the event-driven model provide object-oriented features including inheritance, polymorphism and encapsulation.

The new product will also ship with 20 predefined object classes.

Shipper's client/server effort: On slow boat to China

Evergreen Group still runs mainframes, grapples with PC databases; some pieces go on-line

By Michael Fitzgerald
TAIPEI, TAIWAN

Some problems are the same in any language. Take client/server computing, for example.

The Evergreen Group, one of Taiwan's largest conglomerates and the world's biggest shipping company, has a two-year client/server project under way, but it still has the same number of mainframes as it did when it started. Extremely weak vendor support for critical pieces of the project has slowed it, but the pure logistics of rebuilding mission-critical applications on a LAN are the main culprit.

On the plus side, the company has saved a considerable amount of money and has six significant applications running in a client/server environment: personnel, accounting, budget assessment, an executive information system, a crew management system and a manager for the container yard.

Infergenius Technology Co., a consultancy specializing in downsizing and client/server projects, has run Evergreen's information systems department since 1992. That was when Evergreen started an airline and decided to decentralize into three companies — the airline, maritime shipping and container manufacturing.

Back then, "we were paying almost $2 million a year to IBM just for maintenance," said Patrick Chen, president of Infergenius. "We decided to go to open systems to get away from IBM; we were fed up with IBM's policies."

Infergenius President Patrick Chen *wanted to get away from proprietary systems and IBM's policies*

The company also wanted to avoid IBM's smaller systems, feeling that even systems like OS/2 were proprietary in nature.

Difficult task

But getting rid of mainframes has not been easy. Infergenius has been able to pare down some of its mainframe costs but does not expect to really begin unplugging its mainframes for another few years for a variety of reasons.

"When you downsize, you can't just do it," said K. M. Chang, founder and chairman of Infergenius. "The problem is in mission-critical systems. They're all interactive, so you can't take one down without affecting all the others. You can't simply rewrite certain types of applications, like your airline reservation system."

But Evergreen has managed to get away from IBM for the most part by plugging in Amdahl Corp. mainframes. Although escaping from IBM has been an advantage in Infergenius' eyes, living in the world of PC databases has not solved all its problems.

Infergenius uses Oracle Corp.'s Oracle relational database, and Chen said the company is not happy with Oracle's support. But, he added, "We had to choose it over the others because it had what we wanted," even though Informix Corp.'s Informix is the best-selling database in Taiwan.

Infergenius chose Oracle because of its strong forms tool and also because it felt Oracle was more portable if it decided to switch platforms. Chen also said that by using Open Database Connectivity (ODBC) drivers, the company is not tied exclusively to Oracle.

Chen added that "all the database vendors' service is very weak in Taiwan. Their technical

Evergreen, *page 42*

ON SITE

The Evergreen Group
Taipei, Taiwan

Challenge: To cut maintenance, training and other costs while moving from IBM to open systems.

Technology: Hewlett-Packard Co. Unix and Intel Corp. i486-based machines, Oracle and Sybase, Inc. databases, home-built batch processing and communications applications.

Results: No mainframes unplugged but a 50% drop in costs; more flexibility for the future.

Multiprocessing gets boost

NEC, AST unveil dual-processor systems, but users call them premature

By Jaikumar Vijayan

■ Desktop multiprocessing moved one step closer to the commercial mainstream last week with the announcement of dual-processor-based desktop systems by NEC Technologies, Inc. and AST Research, Inc.

The NEC RISCstation 2000 is a two-processor RISC-based system built around the VR4400 processor. AST's Premmia GX system features dual Intel Corp. Pentium processors. Both systems will ship in August.

The simultaneous announcements received a mixed response from users and analysts, who said they were impressed by the two systems' capabilities. But observers said they doubted that any immediate applications would harness the full-performance benefits the vendors are touting.

Michael Purcell, a software engineer at Baxter Healthcare Corp. in McGaw Park, Ill., said the systems are "a bit premature for typical business users." He said he has no immediate use for them, but he did not rule out the possibility that systems like these could potentially power his database applications. Those applications currently reside on a superserver.

Systems irrelevant to desktops

Analysts agreed that the systems, though powerful, lack immediate relevance in a desktop environment.

"You are definitely going to see a need for all this power sometime, but I doubt if today is the time for it," said James Greene, a research analyst at BIS Strategic Decisions in Norwell, Mass.

Greene predicted that while the need for dual-processor desktop systems such as those from AST and NEC will eventually be driven by multimedia applications, right now they seem destined for environments such as desktop publishing or as engineering workstation replacements.

AST's Premmia will start selling at about $4,800 for a 90-MHz Pentium uniprocessor-based system with 16M bytes of RAM, a 730M-byte SCSI hard drive and a CD-ROM drive. For about $1,500 more, users can add a second processor to the system board.

Meanwhile, NEC's RISCstation 2000 is expected to retail between $6,000 and $10,000. It incorporates dual 64-bit MIPS VR4400 RISC processors and features four baseline configurations with single and dual processors, 16M bytes of RAM standard and up to 1G byte of storage.

According to Tom Kucharvy, president of Summit Strategies in Boston, these features make the systems suited for technical and developer application markets. "The primary benefits would be seen in a CAD environment, for example, where it will be possible to do a design on one processor while running a [computer-aided engineering] analysis on the other."

Desktop multiprocessing

	AST Research Premmia GX	NEC RISCstation 2000
Processor	• Dual 100-MHz Intel Pentium	• Dual 64-bit 150-MHz VR4400
RAM	• 192M-byte maximum	• 384M-byte maximum
Cache	• Standard 256K-byte second-level synchronous	• 32K-byte (internal) • 512K-byte (external)
Graphics	• PCI-based 64-bit graphics subsystem • Up to 4M-byte VRAM	• 64-bit graphics • Up to 4M-byte VRAM
Slots	• Five 32-bit EISA • Two PCI	• Fast SCSI-2 • Ethernet • EISA interface
Hard drive	• 730M-byte fast SCSI	• 1G-byte
Starting price	• $4,850	• $6,000

Boosts server performance

The dual-processor systems from NEC and AST could also be used as powerful database engines in a server environment, analysts said. Most users would probably get a 15% to 20% performance boost by using a dual-processor system to run the operating system on one processor and applications on another, Kucharvy said.

He estimated that fewer than 5% of all servers and fewer than 15% of symmetrical multiprocessing (SMP)-enabled servers can take full advantage of SMP. Most of the current operating systems are not SMP-enabled, so they cannot execute applications in parallel. Also, many applications themselves have not been successfully made parallel so far.

Until then, other vendors might also announce dual-processor-based desktop systems, Kucharvy said, "but I am not going to hold my breath for them."

HP to launch PC/phone hybrid

By Ron Condon
LONDON

Hewlett-Packard Co. said it plans to launch a new type of device in the U.S. this month that allows people to exchange drawings and notes while talking on the telephone.

Omnishare is a stand-alone device consisting of an LED screen, an electronic pen similar to those used in pen-based computers and a small black box containing a processor, hard disk and modem chip. The device connects to an ordinary telephone and allows a person on the phone to send whatever is written on the screen to a range of machines at the other end — another Omnishare, a fax or a PC.

"We are merging the PC, phone and fax with this product," said Jacques Clay, general manager of HP's Grenoble (France) Personal Computer Division.

The product will debut in the U.S. next month, Clay said, and if successful, would later be released in Europe. A PC add-in version will be launched later in the year in both Europe and the U.S., he added.

What's inside

The product uses a low-end 486 processor and has a 100M-byte disk and a PCMCIA slot. Its modem chip is AT&T Corp.'s VoiceSpan, which can handle voice and data simultaneously on an ordinary telephone line. The screen tablet is a monochrome LCD VGA screen measuring 11 inches from corner to corner.

The operating software is based on Windows but has a special interface that mimics papers on a desktop. Papers can be electronically stapled together or spread across the screen, and pages can be turned.

Clay said initial research was done at HP Labs in Bristol, England, development and testing took place in Grenoble and the products will be manufactured in Singapore. HP worked closely with AT&T and Microsoft Corp. on the communications and software, he added.

Clay would not give prices but said Omnishare would be comparable in price to a PC.

Condon is a London correspondent at the IDG News Service.

Evergreen

CONTINUED FROM PAGE 41

support is not good. You ask 10 questions, the local people can answer one, and maybe you get two more answers from abroad. The other seven? No way."

Another issue, he said, is maintenance. "They give you no maintenance, but they charge you for maintenance anyway. It's all based on extra charges."

Still, those charges are not enough to make Inforgenius look back at the mainframe fondly.

Chang declined to discuss specific figures, but he said extensive evaluations of the client/server initiative show that costs have decreased by half. The evaluations take into account such items as eliminated license fees and even the cost of air-conditioning rooms for the mainframes that would have been purchased for the new applications.

Evergreen's client/server architecture is built on the principle that each application has its own server. Chang wrote his own batch-processing application.

For the longer term, Inforgenius is focused on figuring out how to get core business functions, such as document management, booking and equipment control for Evergreen's worldwide shipping business, off the mainframes. It could well take the rest of this century, but Chang said he is hopeful.

"There's always going to be problems when you do this, but they can be solved," Chang said.

Portions of the interviews for this story were conducted in Chinese and translated by Arthur Lee, editor in chief of Computerworld Taiwan, *and Terho Uimonen, an IDG News Service correspondent.*

The approach

Inforgenius has adopted a multi-pronged approach to the client/server strategy at Evergreen. These steps include the following:

- Moving from IBM mainframes to Amdahl machines, which cost Evergreen one-third the cost for the same performance level.
- Building applications in a client/server environment with an architecture that replicates certain mainframe functions, such as batch processing.
- Starting with low-cost hardware/software efforts that will not cost a lot if a project goes awry.

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Novell puts focus on next NetWare

By Suruchi Mohan

Users have expressed surprise at Novell, Inc.'s recent announcement that it will stop further development of the basic NetWare 3.x code, but they reserved greater concern for 3.x to 4.x migration issues, which many are only now beginning to consider.

"I am kind of surprised but don't feel it's that big of a deal," said Ed Wilke, network manager at WHDH-TV in Boston, echoing an almost universal reaction. "It makes sense."

NetWare 3.12, the latest release in the 3.x family, does everything Novell promised for the 3.x series, according to Howard Lubert, president of HEL, Inc., a value-added reseller in Wayne, Pa. "I would love to see disk compression in [NetWare] 3, but no one ever said they'd have it in 3."

Users agree

Because NetWare 3.x has filled the need for which it was created — to provide businesses with a stable networking environment — users say it is time for Novell to move on.

Software technology is advancing so fast that it is best to stop development on an older product and focus on the new, they say.

"I'd love to see Novell put some energy into NetWare 4 and make it as good and solid a product as [NetWare] 3 is," said Brent Moore, a computer specialist at Brigham Young University in Provo, Utah.

In fact, NetWare 3.x users appear to be concerned mostly about the lack of tools to ensure smooth migration to NetWare 4, which has so far lacked stability and been mired in troubled releases and bug fixes. Because Novell will not add new features to the core of NetWare 3.x, users must migrate to NetWare 4 for added services.

The unknown zone

But with Novell acquiring more companies and venturing into unfamiliar territory, users said they are particularly worried about both a lack of tools needed to ensure a smooth migration to NetWare 4 and the quality of support they will receive in their migration efforts. However, these concerns seem to stem more from moving from a known, stable environment to an unknown one than from first-hand knowledge of any specific problems.

Novell has been shipping two migration utilities since it released NetWare 4.0 in the spring of 1993. Moore did a pilot migration using these utilities and encountered some problems in the conversion, but he said those had more to do with the stability of the product than with the utilities.

Novell is seeking to calm user fears of abandonment with the assurance that not only will support of NetWare 3.x continue but that development of advanced services for 3.x such as video, document management and telephony will continue as well.

Although these advanced services are written for the NetWare 4 environment and use directory services, they will be backward-compatible with NetWare 3.x, said William Donahoo, director of product marketing for NetWare. The drawback for NetWare 3.x users will be their inability to use the directory service, Donahoo said.

But David Strom, president of David Strom, Inc. in Port Washington, N.Y., is not impressed. He said he regards NetWare 3 as Novell's bread and butter, saying it is a mature and stable product on which many businesses are run, while NetWare 4 is still not ready for prime time. Until users are guaranteed that they can safely use NetWare 4, stopping development of NetWare 3 is not a good idea, Strom cautioned.

Client/server messaging

Microsoft delay a boon to messaging rivals

By Lynda Radosevich

■ Despite a lot of fanfare, Microsoft Corp.'s Exchange messaging platform will debut in an increasingly competitive market — due in part to a ship date that has slipped by more than a year to early 1995.

Customers at a recent conference in Seattle said Exchange — the client/server update to Microsoft's Mail — is piquing their interest.

Of particular appeal are its robust server capabilities, database synchronization, support for standards such as X.400 and X.500, common administration for multiple servers and gateways and a modular architecture that allows users to plug in third-party applications.

At their fingertips

Robert E. Bayley Construction, Inc., a Microsoft user organization in Santa Ana, Calif., is awaiting the Exchange server to let construction superintendents download shop drawings from a central Exchange server at Bayley headquarters. The off-site superintendents can then enter new information, which automatically updates the central Bayley server. Other sites can then access the updated information.

"With Exchange, we see the construction sites getting updated information right away," said Lynnette Goodman, an information systems director at Bayley.

Competitors amass

However, potential Exchange competitors are gaining ground. For example, Hewlett-Packard Co. and Digital Equipment Corp. already have client/server X.400-based messaging systems and have experience in corporate markets, according to David Whitten, an analyst at Gartner Group, Inc. in Stamford, Conn.

To beef up that corporate presence, HP recently signed an agreement whereby IBM will resell HP's OpenMail to IBM accounts.

Furthermore, Exchange's delay gives Lotus Development Corp. time to simultaneously deliver its competing Lotus Communications Server (LCS), an X.400-based server due out in mid-1995 that combines Notes and CC:Mail.

Meanwhile, Novell, Inc. already offers Global Message Handling Service (MHS), which supports multiple front-end systems. And it plans to deliver this month new Global MHS administration features such as centrally administered gateways.

Novell is also working with newly acquired partner WordPerfect Corp. to develop an X.400-based Open Messaging Environment (OME) in 1995. OME will likely be an open messaging server along the lines of Exchange.

Also, Banyan Systems, Inc. is making headway with its messaging/groupware strategy. Last week Banyan signed a multimillion-dollar, five-year contract with GTE Telephone Operations in Irving, Texas, to provide networking and messaging services for a 30,000-seat network. A key piece of the contract is Banyan's Intelligent Messaging server and BeyondMail E-mail client, according to a Banyan spokesman.

In fourth place

E-mail servers are the fourth most common servers in large companies after file/print, database and network communications, according to a recent study by Forrester Research, Inc. in Cambridge, Mass.

All in one place

One advantage for Microsoft is its ability to provide one-stop shopping for client and server operating systems and applications, Goodman said. Other users said they are already

Exchange, *page 51*

Schedules a meeting and keeps on ticking

The real showstopper at the Microsoft Information Exchange conference wasn't the new messaging platform. Rather, it was a Timex watch that can zap up electronic calendar information from a PC.

Microsoft Chief Executive Officer Bill Gates demonstrated the $130 black plastic Timex Corp. Data Link, which picks up scheduling information without wires from Microsoft Schedule+. A sensor on the watch reads the data in the form of flashing bars of light, much like a bar-code scanner, and then the watch displays the information in its digital time window.

Also, users at the conference were busy trying to compare the Exchange messaging server to Lotus' Notes. Some attendees said Exchange did not look as easy to use as Notes but that it appeared to offer more on the programming end.

Meanwhile, deals with telecom carriers such as AT&T Corp. for public exchange servers are "coming soon," said Tom Evslin, Microsoft's general manager of server products. Microsoft was upstaged by Lotus this spring when it announced a deal with AT&T for public Notes servers.

—Lynda Radosevich

Following technology's paperless trail

Wang Laboratories introduces image-based annotation tool

By Mary Brandel

Wang Laboratories, Inc. recently strengthened its foothold as a Windows-based imaging supplier with what analysts called a much-needed enhancement to its product set: advanced annotation tools.

Annotation allows users to mark up an imaged document or use what amounts to electronic Post-It Notes. It is "a fundamental part of what people will want to do with images," said Tom Koulopoulos, president of Delphi Consulting Group in Boston.

"It's a critical piece for us," said Cliff Sprungl, systems engineer at Colonial Insurance Co. of California in Anaheim. The company is writing new imaging-based applications for its claims adjusters in an effort to become "as paperless as possible," Sprungl said. "We want to give them the same capabilities as they had with paper or the project's not going to fly."

Other leading vendors, such as Watermark Software, Inc. and FileNet Corp., already offer annotation tools.

Wang was ahead of the annotation game in the 1980s with its VS-based Wang Integrated Imaging System. By shipping the capability in Open/Image, analysts said, Wang can retain its claim as a leading-edge provider.

The implementation "may help people on the fence make the decision to go toward Wang," said Bob Larrivee, an analyst at BIS Strategic Decisions in Norwell, Mass.

Keeping above water

This is, of course, what Wang wants users to do. The company is making a concerted effort to establish itself as a leading "work management" vendor, an umbrella term encompassing imaging, workflow and document management. Its focus is on large production applications such as accounts receivable, customer service and mortgage origination rather than desktop systems.

Toward that end, Wang has made a large investment in its sales force, with the goal of building the largest sales and support organization for workflow and imaging in the industry. It claims to have sold 110 Open/Image systems as of the end of fiscal year 1993.

Analysts said Wang's technology will likely not stand in the way of its goals.

"Wang is recognizing and acknowledging that imaging is more of a component of the overall application environment and not *the* application environment," Koulopoulos said. For instance, the company has established a relationship with Powersoft Corp. to integrate Open/Image as an engine to PowerBuilder's front-end development tools.

In fact, the combination of Wang's strong technology and its three consecutive profitable quarters has users at least putting Wang on the radar screen when it comes time to sign on with an imaging vendor, Koulopoulos said.

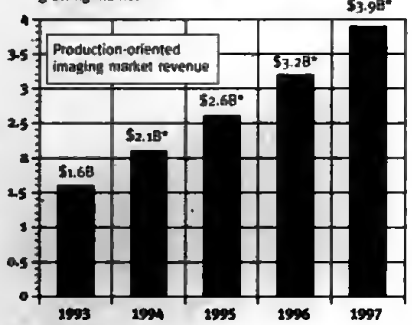
"At least people are thinking about Wang now," he said. "Six months ago, you wouldn't even hear people bring it up." It will be another six months, he added, before Wang leaves the doubters behind.

Wang Chief Executive Officer Joseph Tucci recently sent a letter to customers informing them that Wang will be profitable in fiscal 1994, which ended last week.

The enhanced Open/Image product is available for $399, and the development kit costs $999.

Windows for Wang

Wang's enhancements to its Windows-based imaging product will help ensure the company's edge in this growing market



Source: BIS Strategic Decisions, Norwell, Mass.

Rare books offered on the Internet

By Ellis Booker

■ Priceless manuscripts that have been guarded for centuries behind the stone walls of the Gregorian University and its Pontifical Library in Rome will soon be made available to many more scholars — over the Internet.

As part of a major restoration effort launched earlier this year by Xerox Corp. and Ernst & Young, as many as 2,000 rare books will be scanned, imaged and stored in a database that will be made available electronically to scholars across the globe.

"They were floored," said Robert Rossettie, a partner in Ernst & Young's financial services industry group, referring to the Italians' reception of the imaging technology.

"To say they were not in the forefront of technology is a tremendous understatement," Rossettie said. He added that the 9 million-volume Pontifical Library lacked any sort of automation and was "essentially in the Middle Ages."

Opportunity for academics

In addition to being scanned, some of the works will be converted to machine-readable text via optical character recognition, enabling their contents to be searched and further analyzed by researchers.

Roughly 30 workstations, which will be part of the very first computer network at the library, will also be able to access the image database. On-line access over the Internet to the image database is planned as well.

Xerox's Documents on Demand equipment and software will be used in the 12- to 18-month project and will allow books to be "reprinted" as they are requested.

The cost of the bound reprints is expected to be trivial — approximately $14.

D&B offers low-budget human resources package

By Rosemary Cafasso

Dun & Bradstreet Software took a shot at the lower end of the human resources application market last week by introducing a Windows-based package for LAN-based environments.

Regina Rice, a senior business analyst at Jeppesen Sanderson, Inc. in Englewood, Colo., said her company recently installed the package — called Total HR — as a replacement for a D&B Software mainframe-based human resources application.

She said Jeppesen Sanderson bypassed D&B Software's SmartStream offering in part to avoid the client/server price tag.

"It's not just the initial cost but the ongoing maintenance as well," Rice said. Total HR, she said, will also save costs by "freeing up IS people."

Jeff Comport, an analyst at Gartner Group, Inc. in Stamford, Conn., said client/server applications vendors are all struggling to meet the needs of smaller companies that are not yet ready to implement the time-consuming and often costly full-scale client/server setup.

"Most [vendors] have a strategy for trying to move down market, from separate products to the bundling SAP [America, Inc.] is doing to maybe a lite version of their technology," he said. "So far, no one's found the universal model."

D&B Software's Total HR is a follow-on to a Microsoft Corp. MS-DOS version the company has been selling. It is made up of two core pieces — a payroll module and a personnel module that includes typical employee tracking and benefits management functions.

The modules can be licensed separately. Pricing starts at $30,000 for the payroll module and $20,000 for the personnel module.

Integration, automation

Rice said the integration between the two pieces is a big boost from the mainframe application. With the new system, which the company is still testing, changes made to the personnel module will be automatically updated on the payroll side, Rice said.

Mary Bernasek, a payroll accountant at The Uno-Ven Co., an oil refinery in Arlington Heights, Ill., said her company is also testing Total HR and will likely upgrade to it from the older DOS version.

She said her company is not considering a client/server migration for its human resources operation because "if you have a good thing, why change it?"

Cost was also a significant factor, according to Bernasek. "To turn around and do a whole new system all over again, that wouldn't be cost-effective."

On a budget

The goal of D&B Software's lower-end human resources package is to woo users who do not want to spend big bucks to adopt client/server-based human resources applications, such as D&B Software's SmartStream HR. SmartStream costs at least $100,000 to license the base software. Total HR, however, starts at about $50,000 for the personnel and payroll applications.

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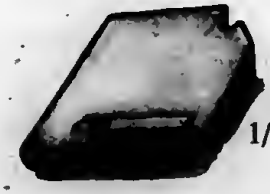

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Resumix eases employee searches

By Ellis Booker

For a job applicant, a resume is a carefully crafted, unique document; for a company with a job opening, resumes are a seemingly inexhaustible natural resource, pouring in by the hundreds or thousands.

A software package that combines imaging, optical character recognition, workflow and expert system technologies helps companies sift through this deluge.

Resumix 4.0 from Resumix, Inc. in Santa Clara, Calif., was announced in April and began shipping in June. The latest version features ResWindows, a Windows desktop module.

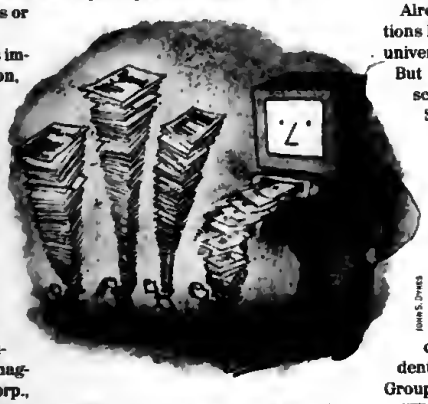
Time's on their side

"The biggest benefit has been in time savings," said Helen Wick-Martin, human resources staffing systems manager at National Semiconductor Corp., which has been a Resumix site since late 1989.

The package has helped speed the search for likely candidates by allowing Wick-Martin and her staff to use keyword searches on a database of approximately 84,000 resumes.

"We've reduced the time to hire from over 100 days to less than 50," she said.

National Semiconductor is also using the workflow capabilities of the package to capture process metrics, such as how long it takes to receive management approval on a new hire, and to track which resumes have been sent out and to whom.



John S. Dykes

At George Washington University in Washington, Resumix was installed earlier this year, replacing a paper-based system in the graduate career placement center.

"Eventually, we'll have up to 4,000 resumes in the system," said Kathy Sims, executive director at the career center.

Already some job-seeking corporations have asked to tap directly into the university's Resumix database remotely. But privacy concerns have cooled the school's interest in this application, Sims said.

However, she noted that the career center is a pilot for the university's human resources department, which is evaluating automated systems for its 10,000 employees.

A renewed emphasis on the importance of the human resources function has prompted the need for tools such as Resumix, according to Natasha Krol, vice president of advanced technologies at Meta Group, Inc. in Westport, Conn.

"These systems allow you to take a fresh look at core business processes like HR," she said.

Resumix uses a high-volume optical scanner and can handle up to 1,000 resume pages per day. Along with extracting key information from the source document and storing this in a database, Resumix maintains a digital image of each original resume.

Its other features include automatic skill extraction and categorization; automatic matches of new resumes against previously specified qualifications; and applicant tracking.

The LAN-based system can also serve as the basis for a fuller human resources system. It can append scanned documents to the basic resumes to create comprehensive records of job applicants or employees.

Resumix runs on Unix servers and supports a variety of PC, Macintosh and Unix and X Window System terminal client workstations.

Resumix 4.0 is priced starting at $30,000.

Mutual integration

The newest release of Resumix — a LAN-based resume-tracking package — allows Windows applications such as electronic mail and word processors to be integrated with the system.

Now there's an easier way to access
without losing touch with y

Exchange rivals on Microsoft's heels

CONTINUED FROM PAGE 47

committed to a Microsoft strategy and are willing to wait for Exchange.

"You have to add a good three to six months to whatever Microsoft says," said Steven Hampton, an IS manager at a major oil and gas company in Wichita, Kan.

He added that the delay is not a problem because he has no immediate plans to buy the hardware his company will need to support Microsoft's Windows NT and Exchange servers. He does, however, see both Exchange and NT as a "corporate direction."

Microsoft customers who have purchased a Mail maintenance agreement will get the Exchange server at no additional cost, as long as the server ships during the time frame of the users' agreement, according to Tom Evslin, general manager of server products at Microsoft.

Vendors line up behind Exchange

Dozens of vendors have announced support for Microsoft's Exchange and have previewed products, including the following:

- **Action Technologies, Inc.** in Alameda, Calif., said the company's workflow software, available on Microsoft's SQL Server and Windows NT Advanced Server, will use Exchange to route business documents.
- **Attachmate Corp.** in Bellevue, Wash., will develop a gateway that lets Exchange users send mail, scheduling and directory information back and forth with IBM Professional Office System/OfficeVision users.
- **EDI Able, Inc.** in Malvern, Pa., said it will offer a module for Exchange that translates electronic data interchange communications.
- **Ericsson GE Mobile Communications**, a wire technology vendor in Raleigh, N.C., said its Mobidem wireless modem will support Exchange.
- **Octel Communications Corp.** in Milpitas, Calif., said it will provide an extension to Exchange that lets users pick up voice messaging across a local- or wide-area network from the electronic-mail mailbox.
- **SkyTel Corp.** in San Jose, Calif., demonstrated a prototype wireless E-mail application that uses Exchange and SkyTel's wireless system.
- E-mail integration vendor **Wingra Technologies, Inc.** in Madison, Wis., added Microsoft Mail support and will add Exchange support to its line of gateways that link PC LAN mail users to IBM, Digital and Unix mail systems. —*Lynda Radosevich*

[redacted]

MAI Systems Corp. has announced FDM Flexpoint, wholesale distribution and accounting software.

According to the Irvine, Calif., company, FDM Flexpoint was written in Progress Software, Inc.'s Progress fourth-generation language and provides enhanced electronic data interchange functionality.

The product includes a full suite of application modules for accounting and inventory management at the wholesale level for industrial supplies, electronic parts, plumbing supplies, construction and heating and air conditioning, according to the company.

Prices range from $16,000 to $70,000, depending on the number of users.

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Product short

DCE Corp. has announced FaxBox/PS, a fax server that analyzes incoming PostScript print streams for fax addressing information. The product can hold up to 10M bytes of PostScript information and contains an internal queuing system to manage outbound faxes. Cost: $4,495. DCE, Stamford, Conn. (203)358-3940.

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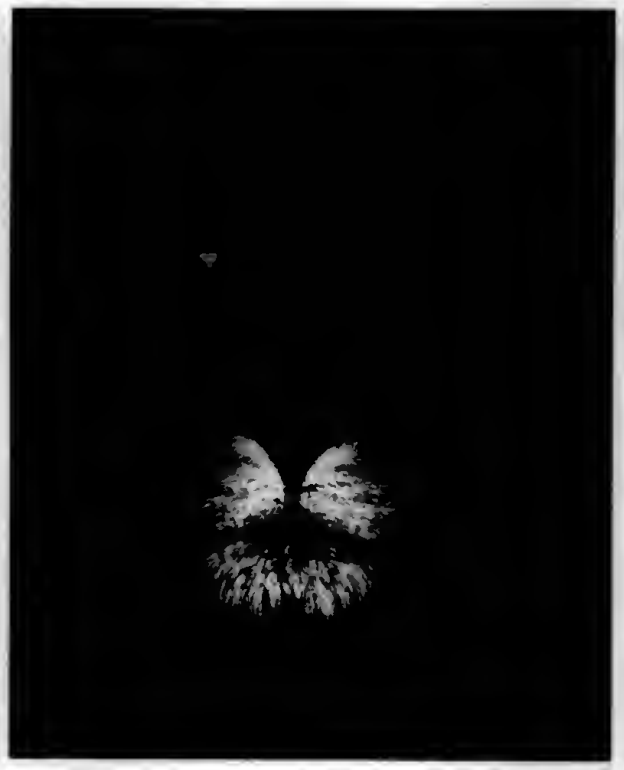

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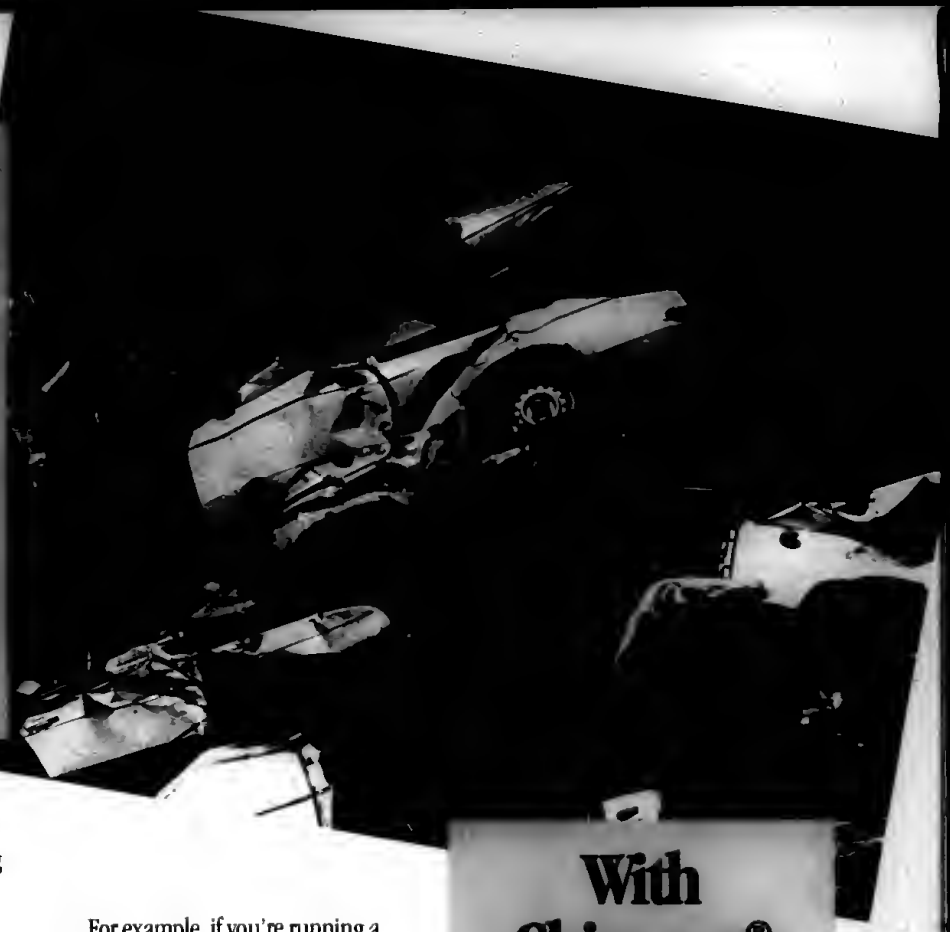

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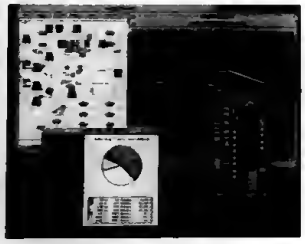

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Enterprise Networking

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Firms cautiously approach info highway

Financial firms bemoan lack of security but plan to use highway anyway

By Thomas Hoffman
NEW YORK

The securities industry is exploring new ways to use the information superhighway as a means to expand its financial services offerings. At the same time, however, industry executives remain wary of the lack of security and other features on the network.

"I approach the information superhighway with a healthy skepticism," said Leo Esposito, senior vice president of telecommunications at Goldman, Sachs & Co. "No one's in charge. It's evolving on its own," he said.

"We'll have to lay our own network in place because there's no security on the Internet or information superhighway today," said Esposito, who added that Goldman, Sachs is currently experimenting with frame- and cell-relay technologies and is evaluating Integrated Services Digital Network technology for getting its investment services to home consumers.

So it was not surprising that the trendy subject was the major theme at the annual Securities Industry Association (SIA) Information Management conference held here recently.

Indeed, many leading investment firms have already implemented a networked infrastructure capable of supporting enterprisewide use of the Internet and are exploring other high-speed networking technologies such as Asynchronous Transfer Mode.

Other conference attendees offered up different concerns on how the information superhighway might affect their organizations.

For example, there are no guarantees of end-to-end service on the Internet because there is no governing agency to oversee its operations, noted Laura DeNardis, a senior research analyst at Meta Group, Inc. in Westport, Conn.

Users watch out

Also, users should be aware that Internet exploration tools such as Mosaic are notorious for using large amounts of corporate bandwidth, said Scott McNealy, president and chief executive officer at Sun Microsystems, Inc. and keynote speaker at the SIA conference.

Among organizations that have already initiated financial transactions on the Internet, most have erected the appropriate hardware and software firewalls for security purposes. Goldman, Sachs, for example, set up a software firewall designed to restrict the ebb and flow of sensitive information in and out of the firm, Esposito said. Other attendees said their organizations have set up stand-alone dedicated Internet servers that run independent of their corporate networks.

Stringent security measures are to be expected from organizations whose proprietary corporate information has historically been protected in a manner similar to Fort Knox. "With the security risks that are out there, availability to our internal E-mail boxes is a scary concept," said Bernard O'Neill, a first vice president at Prudential Securities, Inc. who is responsible for the company's local- and wide-area networks.

Attendees from all circles offered mixed views on whether the federal government should be more involved in regulating the digital speedway. "I don't believe the government is the solution; the government is usually the problem. [The information superhighway] should be built — and has been built so far — without government help," McNealy said.

Government role

Others disagreed. "I think there will have to be some government involvement to make sure that regulations are fair and equitable," said Wendell Jones, senior vice president of technology services at the National Association of Securities Dealers, Inc. in Washington.

Still, many attendees were upbeat about the economic potential of the information superhighway.

"To take it outside the corporate world and bring our clients closer to us by getting into their homes, I think that's where the real bang for the buck is," O'Neill said. "We haven't even scratched the surface in reaching customers in today's world."

AT&T launches multipoint videoconferencing design

By Ellis Booker and Suruchi Mohan

Seeking to make desktop videoconferencing as convenient as a telephone call, AT&T Corp. earlier this month announced a network service and support organization to promote interactive, multipoint video and data calls using equipment from a variety of vendors.

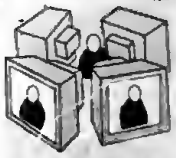
AT&T's WorldWorx Personal Conferencing Service can connect up to 22 remote users. It will be available in the U.S. in the first quarter of next year, according to AT&T. Last year, the company announced a product technology for traditional point-to-point video and data conferencing.

AT&T's first WorldWorx packaged solution, called WorldWorx Desktop Solution, will integrate an AT&T Globalyst PC, AT&T Vistium Personal Video System and the WorldWorx Network Service. Charges per user for the service will range from $1 to $1.50 per minute.

Just how significant is it?

But while users are anxious to get their hands on the new technology, analysts are split over the significance of AT&T's strategy.

"On first read, it is an expensive phone," said Michael Yoakam, coordinator for distance learning programs at Indiana University in Bloomington. "But it lets you do videoconferencing for the personal touch and screen sharing for design." Yoakam also evaluates technology and makes recommendations to corporations.



AT&T not alone

VTel Corp. in Austin, Texas, recently demonstrated a multipoint videoconferencing setup at the International Teleconferencing Association trade show in Dallas. Using its own VTel MCU-II multipoint control unit, the company demonstrated the setup among three Intel Corp. ProShare Video System 2000s. The Intel system has been limited to point-to-point connections so far.

Currently, it costs about $5,000 to set up each user, but Yoakam said he thinks the benefits justify the costs. The service will significantly reduce travel time and expenses by cutting long-distance travel and commuting time.

Dr. Thomas Pearson agreed. Pearson is a cardiologist at Bassett Healthcare in Cooperstown, N.Y. He is helping to create an integrated system with two community hospitals and 14 outreach clinics in rural areas.

The Cooperstown facility is a beta-test site for AT&T's multipoint control unit. So far, it is working extremely well, Pearson said. "Doctors feel their patients [in rural areas] get second-rate care." Some outreach clinics do not even have a doctor on duty. All patients are examined by nurse practitioners, who sometimes do not have the expertise to handle complicated cases. With this technology, doctors can see and talk to patients in remote areas.

Some observers, however, questioned the viability of desktop-to-desktop video, given the cost of network bandwidth and the relatively low quality of video using public data networks such as basic rate Interface Integrated Services Digital Network (ISDN).

Establishing the digital links will be the hardest part of the initial implementation of this technology, Yoakam said. Local telephone companies "are full of promise but short on delivery" for ISDN, he said. "The availability of ISDN services is real spotty. The ability is there to deliver the service, but telephone companies are not aggressive in rolling it out," he said. "People in the business are leery of these promises."

On the slow side

They have reason to be wary. The U.S. has traditionally been slower than European countries in adopting ISDN. But if some telephone companies are to be believed, ISDN will become fairly widespread by year's end.

Sarah Dickinson, program director for visual and multimedia telecommunications at Personal Technology Research, Inc. in Waltham, Mass., said the announcement was "very significant." It illustrates that AT&T realizes the videoconferencing sale is not just a matter of customer equipment or a network but a combination of both, she said. She also applauded AT&T's support of the H.320 videoconferencing standard, which is also supported by IBM, Apple Computer, Inc. and Sun Microsystems, Inc.

To this end, AT&T said it would work with various hardware and software vendors to make interoperability a reality.

Network management: How much is too much?

As vendors broaden offerings, users question what is really needed

By Steve Moore

Faced with a bewildering array of increasingly complex network management products and services, some users who once asked vendors, "Where's the beef?" are now protesting, "Too much beef!"

"You have to fight the urge to believe that you need to have everything controlled by one system and that somehow, magically, that's going to make your life simple," said John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Newark, Del. "You look at these new systems and you say, 'Wow, it slices, it dices, it purees,' and then you look at how much it costs and you say, 'Hey, I can do without the puree.'"

As vendors broaden their network management offerings, users struggle to determine what they really need.

"It becomes a matter of scope and definition as to what vendors want to say is a part of network management," said T. C. Thomasson, manager of network services at Lykes Bros. Steamship Co. in New Orleans. "Very few sites need everything that's labeled as network management."

Uncertainty lingers

Users' uncertainty about network management tends to show up in their network purchasing habits. "Most of the network vendors I work with say that in many cases, their customers don't actually ever buy their network management products," said James Herman, vice president of Northeast Consulting Resources, Inc. in Boston.

"We've studied network management since 1982. And during that period of time, users have asked for network management in 85% of their network [request for proposals], but they've executed the buy in only 17% of the cases," said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

Analysts offer guidelines to users who make significant investments in network management.

"You should never spend on a network management system an inordinate percentage of the cost of what you're attempting to manage," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington. "You probably shouldn't be spending more than 10%."

Dzubeck said the 10% figure applies to networks that serve at least 20 users and that companies whose networks are smaller than that usually do not need to invest in network management systems.

Overspending on network management can drive up costs by unnecessarily increasing the network's complexity.

"When you have too much network management complexity, that should show up in more support staff costs and also more capital costs because the capital budget includes network management hardware, agents and applications," said John Morency, principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

"Network management is a network availability enhancer. If your network's availability needs enhancing, you need [more network management]. If it doesn't, you don't," Nolle said.

Despite the cost and complexity of today's network management tools, users keep hoping for the best.

"I'm looking forward to very sophisticated management tools that actually do make my life easier. However, I haven't seen them yet," said Adam Lynn, a senior LAN engineer at Micro Research Industries in Alexandria, Va. "They're getting more sophisticated, but the learning curve necessary to understand them is very steep. They tell you everything in the world — more than you ever actually need to know."

More traffic

So how much is too much? Scoggin said he has to be careful about how many Simple Network Management Protocol packets traverse his network. Sometimes, he said, the network management information actually approaches the volume of the rest of the data on the network.

"What you want is a scheme that becomes more distributed, with remote network monitoring agents" to reduce database complexity and polling overhead, Morency said. That way, "you don't force a centralized console to send all these polls out only to find that things are bunky-dory at the remote site."

Associations, firms rush to build private CompuServe-like networks

By Mitch Betts

One of the biggest headaches for the nation's fire and ambulance departments is the fact that some people call an ambulance for noncritical transport to the hospital when they should be calling a taxi.

That is exactly the kind of issue fire chiefs are discussing on their private information network, which is run by the International Association of Fire Chiefs in Fairfax, Va.

Fines may solve problem

"For example, they may learn that Salt Lake City has dealt with the problem by passing an ordinance that levies fines for abusing the [ambulance] system," said Ann Swing Kelly, director at the association's Management Information Center.

Software and data processing for the private information service — sort of a mini CompuServe — are provided by Connect, Inc., a Cupertino, Calif.-based firm that specializes in helping organizations set up virtual private networks for on-line information and electronic commerce.

Why not just set up a forum on CompuServe, Inc.'s public network? "Actually, there is a forum on CompuServe for fire buffs, but the difference is that we don't sell T-shirts. Our discussions are a lot more serious, with topics like government regulations, infectious disease control and arson," Kelly said.

The dial-up network has about 800 users, including fire chiefs, officials in related fields and some equipment vendors. The fire chiefs often swap stories about the best fire trucks and hose nozzles to buy, Kelly said.

With enterprises eager to create their own mini Internets, there has been a flurry of activity in this market niche in the last few weeks, such as the following examples:

- The Instrument Society of America in Research Triangle Park, N.C., said it selected Automation News Network in Pittsburgh to provide an on-line network for its 50,000 members.
- Telescan, Inc. in Houston said it applied for a patent on the technology — code-named Sunflower — it uses to build private on-line networks. For example, the firm used the technology to build AIA Online for the American Institute of Architects and Billboard Online for *Billboard* magazine.
- National Purchasing Corp. in Irvine, Calif., plans to create a private, electronic commerce network for the 6,000 member companies in its purchasing cooperative.
- Knowledge Systems, Inc. in Chantilly, Va., said it has upgraded ChamberNet, an on-line network for members of a professional association called American Chamber of Commerce Executives in Alexandria, Va.

Connect users

As for Connect, users of its system range from software vendors that can communicate with customers about bugs and upgrades to Domino's Pizza, Inc. in Ann Arbor, Mich. Domino's has a custom network that sends news and documents from headquarters to receiving clerks, drivers and production workers in 26 distribution centers.

Connect usually runs the on-line networks from its own data center, but the firm recently introduced the Connect Corporate On-Line Server, software that will run such a network in-house.

Pricing for the software, which will be available in the fourth quarter of this year, begins at $300,000. The Unix server uses the Internet as a gateway to other electronic-mail systems.

Briefs

Frame-relay support

IBM said it will add frame-relay support to its 3746 Model 900, a 486-based channel extension unit that connects to the 3745 front-end processor. The frame-relay capabilities are slated to be available in October as part of a new release of IBM's Network Control Program software. The vendor also said it plans within a year to field a stand-alone version of the 3746 supporting Advanced Peer-to-Peer Networking for use in branch offices. The 3746 handles up to 120 64K bit/sec. lines, compared with four on the 3745.

GTE video network

GTE Telephone Operations announced plans to build a video network able to reach 7 million homes over the next decade. An initial investment of $250 million by the end of next year will bring the broadband (fiber and coaxial cable) network to four GTE markets: Thousand Oaks, Calif.; St. Petersburg/Clearwater, Fla.; Honolulu; and northern Virginia. Programming on the network is scheduled to begin by next year.

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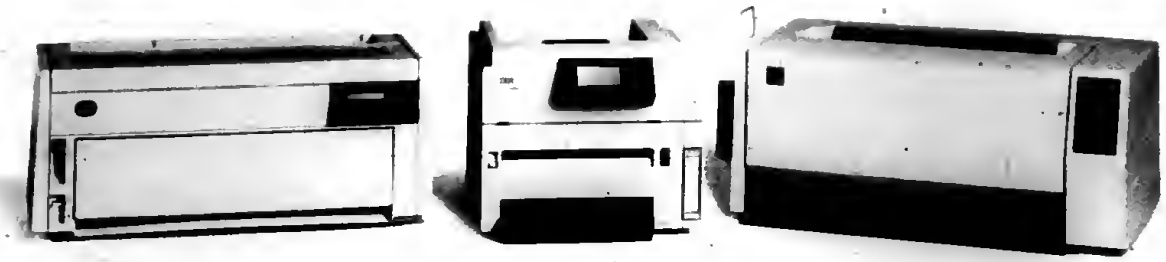

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IBM SUPPLIES BY LEXMARK. TAKE A CLOSER LOOK.

IBM tape library battles rival, user perception

By Craig Stedman

Expectations were not particularly high for the 3495 automated tape library IBM introduced two years ago for use with mainframes. And to this point, the 3495 has basically lived up — or rather down — to those expectations, according to users and analysts.

IBM's tape library sales remain tiny compared with those of Storage Technology Corp., which entered the market five years earlier than IBM. StorageTek claims an installed base of about 6,600 systems. Industry observers put IBM's total sales at 100 to 200 units since shipments started in mid-1993.

Still, analysts are not writing off the computer giant's chances of becoming a bigger factor in the library market over time. Higher-capacity cartridges and related storage management software IBM has under development could give it a competitive advantage, some analysts said.

Too little, too late?

However, the higher-capacity tapes are not scheduled to be available until the second half of 1995, IBM executives indicated. And users who bought StorageTek libraries before IBM released its product said the current 3495 technology gives them little reason to change horses.

"IBM does some things very well, but I think their automated tape library is not well-conceived. It didn't compute with some of our opinions out here in the real world," said Tom Birk, operations manager at the Environmental Protection Agency's national computer center in Research Triangle Park, N.C.

At 92 feet long in its full 18,000-cartridge configuration, the 3495 is just too darn big for many data centers, Birk noted. The EPA has 12 of StorageTek's cylindrical libraries with a total capacity of about 70,000 cartridges, an amount that would not have fit in its computer room if the agency were using the 3495, he said.

Simplicity preferred

The 3495's industrial-strength robot appears to be overengineered to the point of unnecessary complexity, Birk added. Meanwhile, StorageTek's 4400 and Powderhorn 9310 libraries support a range of platforms in addition to MVS, something that "was essential" for the EPA because it also uses Digital Equipment Corp.'s VAX systems and a Cray Research, Inc. supercomputer.

Another advantage for StorageTek is its ability to connect up to 16 libraries in a unified complex with robot pass-through capabilities, said Bill Finefield, administrator at the Defense Information Systems Agency's supply and lo-

IBM tape library, *page 62*

Users need special skills to tame giant databases

By Kim S. Nash

Gargantuan databases, hundreds of gigabytes or more in size, require special care and feeding. Database administrators should watch out for several trouble spots that do not necessarily give grief on more typically sized databases, users and analysts said.

Take backups, for instance. Daily database backups are often done at night or on weekends because the process can be lengthy, thereby interrupting regular work. "Multiply that times hundreds of gigabytes and you see what kind of chore you have ahead of you," noted Matt Reagan, head of the Digital Equipment Corp. special interest group within the International Oracle Users Group.

Ministering to very large databases is on Reagan's mind lately because that hot potato could be in his lap soon, he said. Reagan is a database administrator at Centocor, Inc. in Malvern, Pa. Data at the pharmaceuticals firm is likely to multiply quickly as the company gets further into clinical trials of new medications. "I've escaped it so far, but I know very large databases are something I'll have to tackle soon," he said.

Where they come from

At most shops, though, decision-support applications — rather than on-line transaction processor (OLTP) systems — spawn the largest databases.

Decision-support, or so-called information warehouse, databases are most often separate snapshots or replicated copies of production OLTP databases. Splitting up the databases that way helps users skirt sticky maintenance tasks, such as backup and recovery, that would otherwise be intolerable on a huge database, noted Tim Shetler, vice president of product marketing at Informix Software, Inc.

The biggest Oracle Corp. OLTP databases in production measure 200G to 300G bytes, according to Carl Tsukahara, senior vice president of server product marketing at Oracle. But Fingerhut Corp. is eyeing the possibility of stuffing 7T bytes of data into an information warehousing application atop an Oracle database.

The Minnetonka, Minn.-based catalog merchandiser is rewriting a marketing application that could lead it to put all 7T bytes of its his-

Giant databases, *page 62*

A hit list of action items for caretakers of very large databases

RECOVERABILITY

How do you back up or otherwise provide redundancy for the database? In most cases, disk mirroring is more efficient than tape drives because it restores faster.

DATA ORGANIZATION

Can the database do backup and restore on data partitions or only tables? Backing up a multiple-gigabyte table can take longer than backing up several smaller partitions of the table.

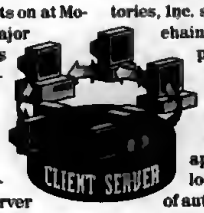
EFFICIENT USE OF SPACE

Does the database automatically reallocate deleted or dead space? Manually combing a very large database for air pockets to fill or move as data is moved beyond is cumbersome and time-consuming.

Motel chain locates on client/server route

By Ellis Booker
DALLAS

They are still leaving the lights on at Motel 6 — thanks to a pair of major information systems projects at the nation's largest hospitality chain.



Control Data Systems, Inc. in Arden Hills, Minn., is coordinating the three-year move of Motel 6's core business systems to a client/server architecture. The multimillion-dollar contract is a first in the hospitality arena for Control Data, which recently said it had been named the prime contractor on the job.

Motel 6 needed to move to a new architecture because its aging Wang Laboratories, Inc. system could not handle the chain's growth. The company also plans to automate its approximately 770 motel properties around the country as it upgrades the network architecture and corporate applications. Right now those locations lack much in the way of automation — reservations are transmitted by modem to waiting printers or older-issue PCs, for example.

ClearSystems, Inc., a Dallas application development firm, will create new general ledger and financial applications or integrate commercial packages into the new structure. Object-oriented development tools from Dynasty Technologies, Inc. will be used to develop applications running under a Sybase, Inc. relational database.

Meanwhile, Motel 6's wide-area network, now based on leased X.25 lines, will migrate to TCP/IP using a public frame-relay network, according to Cindy Wiggins, manager of the PC network at Motel 6's Information Technology Services (ITS).

"The biggest benefit is we'll be upgrading from 4.8K bit/sec. to 56K bit/sec., which will improve response time" for remote users, she said. The firm has yet to pick a carrier for the frame-relay network.

The WAN will connect with a Novell, Inc. LAN that supports about 100 users at Motel 6's headquarters and another 50 users at regional offices.

"We just automated all the locations with a fax server here at corporate," said Leighton Petersen, director of ITS. Computer design for the properties is just beginning, he added.

In with the new

Motel 6 is replacing a 7-year-old Wang minicomputer with SPARCserver 1000s from Sun Microsystems, Inc. Simultaneously, the chain is upgrading its private X.25 corporate network to a public frame-relay network.

Vendors inhabit systems management niches

Legent serves up more components of XPE systems strategy

By Rosemary Cafasso

■ Legent Corp. recently added two more pieces to its systems management initiative by rolling out resource and data management tools.

Paramount/XP, introduced late last month, covers the resource management piece of Legent's Cross Platform Environment (XPE) strategy, which is intended to address most major components of systems management, including backup and storage management, automated operations, software configuration management and database management. Legacy Data Mover/XP, which Legent announced and made available last week, is a tool set to move data from legacy systems to other platforms, such as Sybase, Inc.'s database management system.

The goal of XPE is to provide these systems management functions across mixed platforms and allow users to manage them from single points of control.

"With this announcement and the trouble-ticketing announcement from a few months ago, they seem to be delivering on XPE," said Kevin O'Neill, vice president of research at Business Research Group in Newton, Mass.

But it is definitely one step at a time.

For example, only one piece of Paramount/XP is currently XPE-enabled and therefore able to fulfill that product line's promise of cross-platform functionality. Paramount/XP-Performance, the XPE-enabled piece, was designed to proactively manage systems activity by monitoring and collecting it.

Coming this year

Other pieces of Paramount/XP, including management tools for capacity planning, assets and chargebacks and a query and reporting tool, will be XPE-enabled within 12 months.

Ron Weff, manager of performance and capacity planning at Charles Schwab & Co. in San Francisco, is evaluating Paramount/XP-Performance. He said it does a good job of collecting data and shipping it to a central location for analysis.

Although Schwab handles this operation centrally, Weff said, in the future it may want to distribute system data — essentially leaving it on servers or other network nodes — and then access it on an as-needed basis.

Unix world gets much-needed IBM Job Scheduler

By Thomas Hoffman

Although last month's Securities Industry Association Information Management conference was filled with myriad automated trading-room application software launches, IBM quietly stole the stage with a desperately needed software package of its own — a Unix-based batch-processing job scheduler for its RS/6000 and Powerparallel environments.

IBM Job Scheduler for AIX, which IBM co-developed with securities giant Salomon, Inc. in Sweden during the past year, is a work-load management tool designed to manage the complex tasks of scheduling, initiating and monitoring work loads in distributed environments. The package lets users partition work loads into logical or functional units for areas such as payroll, order processing and inventory within their Unix environments.

Steve Neff, a senior operating officer at Salomon in New York, said the brokerage began developing its own systems management tools five years ago when there were few production-strength Unix applications on the market. Without automated job scheduling, "it would be extremely difficult to move off the mainframe platform," Neff said, referring to Salomon's long-term plans to migrate off the mainframe.

Crucial technology

Analysts said they believe the package will be a boon for Unix-laden brokerages, particularly those organizations that have invested heavily in parallel processing architectures. "When you get into high-volume processing without mainframes, it's been a real problem. There's not just a demand for this type of product — it's essential," said Jim Johnson, chairman of The Standish Group International, Inc., a Dennis, Mass., on-line transaction processing research firm.

IBM Job Scheduler for AIX, currently running on Oracle Corp.'s Oracle 7.1, is available on a limited basis for IBM's DB2/6000 relational database, according to Bertil Fredstrom, a market development program manager at IBM Sweden in Lidingo.

IBM, which is also working on a Sybase, Inc. version of the product, will sell the package for $4,000 per controller and $985 per agent. Fredstrom said the RS/6000 and Powerparallel versions will become available on July 22 in the U.S.

Giant databases

CONTINUED FROM PAGE 61

torical customer information on-line, said Jesus Rodriguez, Fingerhut's chief architect. Fingerhut, the second-largest cataloger in the world, now stores that data on more than 19,000 IBM tape cartridges, Rodriguez said.

Parallel database technology — a database's ability to split up and run queries, indexes, joins and other functions on multiple processors — theoretically enables databases to routinely grow much bigger than they have been so far, he explained. A multiterabyte application would be impossible without parallel database features, Rodriguez said, adding that he plans to use Oracle 7 Release 7.1 for the job [CW, June 13].

Some say giant, mainframe-housed databases cannot run properly in a Unix environment for lack of processing power. Terabyte-size databases on Unix are "pretty rare," according to Shetler. The largest Informix databases in everyday production use right now range from 60G to 100G bytes, he said. One Informix customer is testing an information warehousing application against a 300G-byte system but has not gone on-line with it yet, he noted.

Anything you can do...

Other distinctly pro-downsizing observers maintain that anything done on a mainframe can be done on Unix. "It's just a matter of whether your programmers design the application the right way," said consultant Larry DeBoever, president of DeBoever Associates in Burlington, Mass.

Some users have decided to leave well-enough alone for now. For example, an Ohio manufacturer in the midst of downsizing from big Digital Equipment Corp. VAXs to Alpha-based hardware opted to keep a sizable Rdb database, a Class-III software engineer at the firm said. "It's just too much to worry about right now. We want to do this gradually," he explained.

IBM tape library

CONTINUED FROM PAGE 61

gistics information processing center in Richmond, Va. The facility has almost 80,000 tapes on 14 StorageTek libraries, all of which are tied together, Finefield said. Multiple 3495s can also be hooked together, but again, size is a drawback, and a greater level of operator intervention would likely be required, he said.

One satisfied 3495 user is Phil Davis, director of technical services at Mazda System Services, the information systems unit of Mazda of North America, Inc. in Flat Rock, Mich. "It's exceeded all of our objectives," he said.

Mazda chose the 3495 largely because StorageTek had not yet introduced compatible versions of IBM's 36-track 3490E tape drives, Davis said. While StorageTek now offers 36-track products, the 3495 has other advantages that would result in a similar choice if the automaker were buying today, he added.

IBM's support for three times the number of cartridges in a single unit is a plus, and the 3495 is also "much easier to work in than the StorageTek one," Davis said. "It's better lighted, and there's more room to maneuver. It's very difficult for an operator to move around in" StorageTek's libraries.

Bill Nelson, director of marketing at IBM's Storage Systems Division, conceded that the 3495 "doesn't have a particular feature/function leadership" over StorageTek's products at this point, which makes it difficult to persuade customers to move away from the market leader.

"Clearly StorageTek has an established base, and I don't have that base to grow from," Nelson said. He added, though, that IBM hopes the larger-capacity drives due out next year will give the 3495 a boost and bulk up its midrange-oriented 3494 library for use in a larger number of mainframe installations.

Fara Yale, a principal analyst at Dataquest, Inc. in San Jose, Calif., said IBM is already "making excellent progress with the 3494," a smaller unit with a less complicated robot that started shipping last fall. IBM's Systems Managed Storage software also helps, but the 3495 continues to face "very strong competition" from StorageTek, Yale added.

Midrange strategy

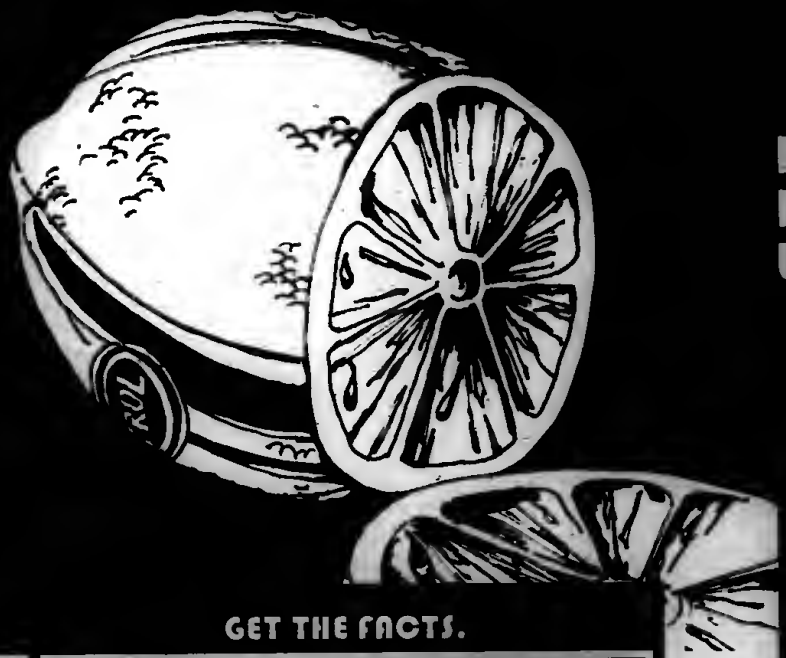
IBM plans to add data archiving support to the AS/400 by year's end to expand the midrange market for its 3494 tape library.

The 3494 is positioned primarily as a midrange product, but IBM said most of its initial sales have been for use with air-cooled ES/9000 mainframes because of the AS/400's lack of archiving capabilities. Currently, the library can be used only for backup on the AS/400.

Bill Nelson, director of marketing at IBM's Storage Systems Division, said software support for archiving will be built into either the OS/400 operating system's upcoming Version 3 or a release of the storage unit's Adstar Distributed Storage Manager software, which is due out on the AS/400 later this year.

Analysts noted that the AS/400 tape library market remains in its infancy, with interest limited to a subset of large shops. "That's a totally untapped market, and not many of those guys are running 3400 tapes," said Robert Callery, a senior analyst at International Data Corp. in Framingham, Mass.

— *Craig Stedman*



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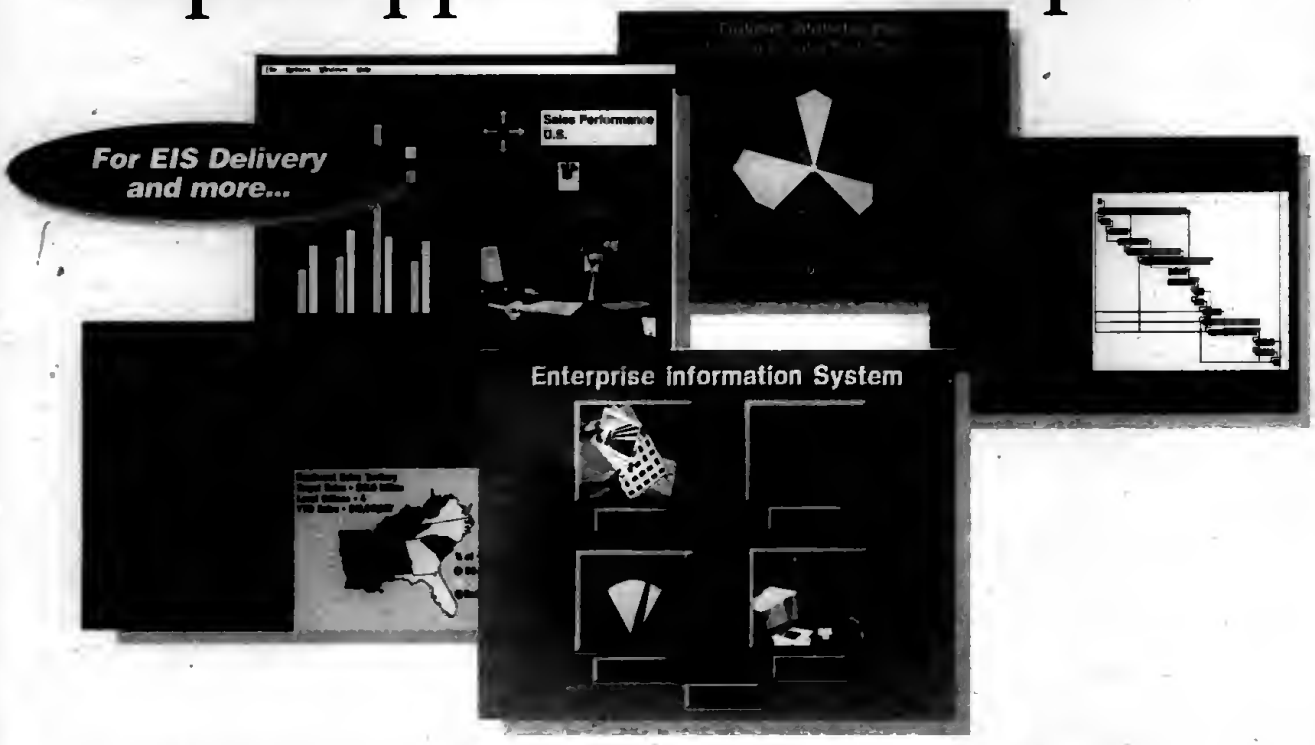

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Object technology

OpenDoc ships alphas for OS/2, Windows

By Melinda-Carol Ballou

■ Component Integration Laboratories' OpenDoc specifications took a giant step toward becoming reality last week at PC Expo in New York with the announcement that alpha versions are shipping for OS/2 and Windows.

OpenDoc is a set of specifications that CI Labs claims will allow users to build componentized software by connecting "standard" parts, making elements such as a user interface or an object-store facility the same among all vendors supporting OpenDoc.

CI Labs is supported by various industry players. For example, IBM is shipping the alpha version of OpenDoc for OS/2, and WordPerfect Corp. is shipping an alpha release of OpenDoc for Windows. Apple Computer, Inc. shipped an alpha version of OpenDoc for its Macintosh this spring.

Big head start

So far, some 100 applications support Microsoft's OLE, OpenDoc's chief competitor, with 200 more expected by fall, according to Microsoft officials. The widespread use of OLE through Microsoft's incorporation of it in major desktop applications makes OpenDoc/OLE interoperability all the more critical, according to industry analysts.

"We are seeding OpenDoc now to around 12,000 developers," said Jed Harris, executive director of CI Labs in San Francisco. Getting OpenDoc out into the market as soon as possible is critical because Microsoft Corp.'s Object Linking and Embedding (OLE) — OpenDoc's major competitor — is already ubiquitous.

Interoperability critical

OpenDoc features interoperability with OLE, along with full object-oriented support and robust messaging capabilities, according to some developers working with early versions of the product.

"OpenDoc's interoperability with OLE is critical because people now are developing to the OLE 2.0 architecture," said Richard Kilmer, manager of systems architecture at TelePad Corp. in Reston, Va. TelePad develops portable hardware systems with alternative input methods such as pen- or voice-based devices.

OpenDoc's support for multiple platforms will allow OLE to be distributed across heterogeneous operating systems before Microsoft itself provides such support, CI Labs officials said. A developer's kit for distributed OLE is not expected until the end of this year at the earliest and may not be available until next year.

Distributed OLE is unlikely to ship generally until Cairo — Microsoft's object-oriented operating system — ships in 1996, according to Microsoft officials.

More power?

Industry analysts praised OpenDoc's support for OLE.

"I think this interoperability is significant because OLE itself as a development environment is very hard to develop to," said Judith Hurwitz, president of Hurwitz Consulting, Inc., a Watertown, Mass., consulting firm. "Performance isn't good, either. Because it's the legacy environment, [CI Labs] has to support OLE to enable people to make the transition."

"OpenDoc looks fundamentally more powerful and flexible than OLE for accomplishing similar ends," said William Zachmann, president of Canopus Research, a Duxbury, Mass., consulting firm. OLE has "no real inheritance structure, and it is not truly object-oriented.

"If Chicago [Windows 4.0] takes as long as I think it will" for 32-bit OLE, Zachmann added, "then OpenDoc may be in an extremely good position. It will have more functionality and power, and over a broader range of platforms, it will be available sooner."

Taligent reports progress

Developers display applications on range of platforms

By Ed Scannell

As part of a progress report, Taligent, Inc. recently showed off its development framework running on top of two additional operating systems, and a user publicly demonstrated an application created with it.

Taligent showed the Taligent Application Environment (TAE) running on top of Microsoft Corp.'s Windows NT and IBM's OS/2 and pieces of it running with Hewlett-Packard Co.'s HP/UX. Currently, IBM's AIX is the only platform for which the entire TAE is available.

Object programming ORIENTED

Several third-party developers also showed off the beginnings of applications they are creating.

The user, Home Box Office, Inc. (HBO), gave the first public demonstration of an application created using TAE running on top of AIX.

HBO's application, which helps the company track worldwide sales and licensing rights to movies, was created by a half-dozen programmers in just 17 days. It required 5,700 lines of code. Creating a similar application under Windows or AIX would have taken a few months, HBO officials said.

TAE "gave us the entire structure for the application. The application provided us automatically with things like menus and dialog boxes," said Stephen McGrath, a programmer at HBO.

The HBO application uses TAE's filters, which allow end users to intelligently search for data based on several different criteria, including color. Users can then attach other relevant data to the information found in their search and share it with other users.

Demonstrating TAE's ability to create compound documents from a variety of operating environments, HBO showed the inclusion of two-dimensional graphics and a full-motion video pulled from Apple Computer, Inc.'s QuickTime multimedia product. These elements were then integrated into a text document.

Chicago dreamin'

Taligent will adapt its TAE development environment to Microsoft's upcoming Chicago operating system, Taligent officials said. But Taligent has not received any Chicago beta code from Microsoft, the executives added, and they declined to specify when they will deliver a Chicago version.

Build on earlier work

"One of the good things about Taligent is you don't have to build an entire application from scratch. You can just build a nugget of a good idea into an existing application," McGrath said.

TAE seems to have won over at least a few smaller software houses that have some experience programming for Next, Inc.'s NextStep environment. NextStep figures to be a direct

Taligent, *page 68*

Getting it all together

In its latest cut of TAE, Taligent demonstrated its ability to smoothly integrate data from 20 programs created by developers who were unaware of one another's efforts. Those different programs — including a word processor and scanning software, among others — worked together in the demonstration.

The demonstration features a fictitious garden supplies company ordering digging tools from a distributor. To place the order, the garden supplies company drags the distributor's business card from a database to an on-screen order form, onto which the data is automatically entered.

Next, the garden supplies company drags the distributor's card to a telephone icon, which automatically calls the distributor. Once the order reaches the distributor, the telemarketer there discovers the buyer has reached its credit limit.

To help resolve the problem, the telemarketer pulls up his supervisor's line-of-credit information about the garden supplies company. He takes some information from that line-of-credit data and inserts it into his on-screen order form. Once that happens, the credit data updates the information on the form. Those changes, in turn, are simultaneously made to his supervisor's on-screen record using TAE's built-in global highlighter.

Then the telemarketer writes a memo to his supervisor, asking to extend the buyer's line of credit. In the memo, the telemarketer includes a three-dimensional representation of the item requested by the garden supplies company and an international font. In this example, the date of June 6, 1994, was represented in Kanji characters.

It would also be possible in a financial application, for example, to drag a live ticker tape of a particular stock's performance into the document.

The telemarketer is then able to mail the compound document to his supervisor electronically, change the purchaser's credit line and complete the order. — *Ed Scannell*

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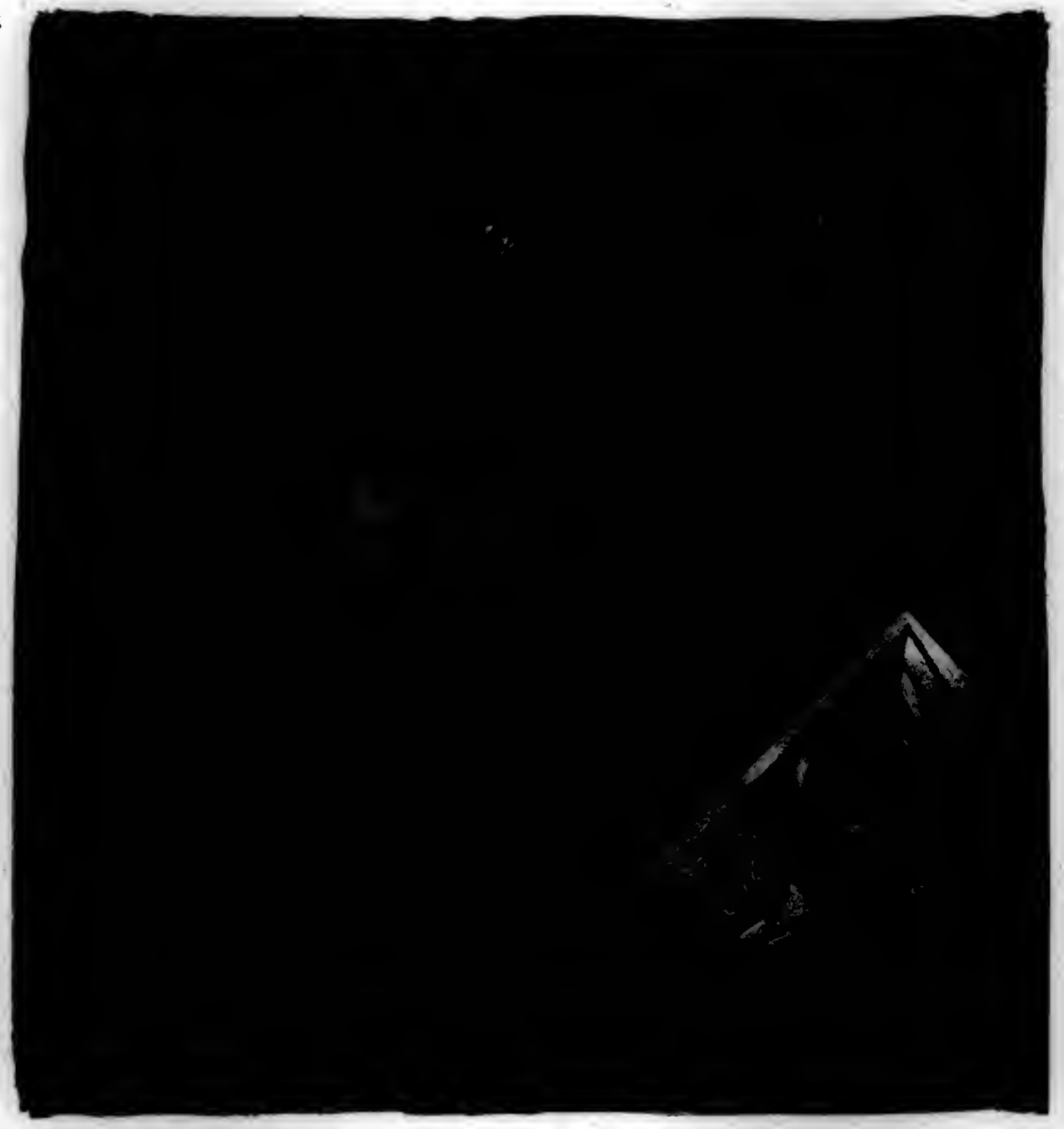

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Bandwagon builds to deliver specific tools for Lotus' Notes

By Lynda Radosevich

Much-needed development options are under way for users looking to piece together a corporate knowledge base using Lotus Development Corp.'s Notes as a central repository.

While Lotus rolled out its own general Notes development tools at PC Expo in New York last week, third parties chimed in with tools for more specific needs such as linking Notes to project management and document management applications.

Filling one key piece of the Notes development pie, Quality Decision Management, Inc. in North Andover, Mass., last week unveiled Quality At Work Project. The product is a workflow-enabled project management program with a two-way link from Notes to Microsoft Corp.'s Project, a project management application.

Likewise, Marin Research Group in Mill Valley, Calif., introduced Project Gateway, software that integrates Microsoft's Project and Symantec Corp.'s TimeLine with Notes.

Electronic evolution

Tools such as these are vital for enabling companies to create complete electronic views of complex business scenarios, according to Ameet Patel, manager of advanced technologies at BASF Corp. in Parsippany, N.J.

For instance, companies can use Notes to keep track of messaging, scheduling, document management and workflow applications and to let them talk to one another. A project manager could initiate a "conversation" with a personal scheduler and use Notes to keep everything synchronized.

"You can take a product and evolve it in a way that you see is important to the business," Patel said.

Quality Decision Management also announced customer management and help desk applications for Notes.

Other announcements included the following:

- **Percussion Software, Inc.** in Boston introduced Notrix, programming software for manipulating large, complex Notes databases. The company also introduced related software that lets Notes users view and manipulate data from 50 databases. The products include an event manager that permits users to trigger events within Notes or outside applications in response to designated events within Notes. For instance, a brokerage firm could develop a program that updates a corporate database whenever a broker enters key information in a customer form in Notes, according to the company.

- **Trinzic Corp.** in Palo Alto, Calif., introduced a new version of its Forest & Trees decision-support software that accesses data stored in Notes databases significantly faster than before, according to the company. The software also taps into other data sources, such as Oracle Corp.'s Oracle and Microsoft's FoxPro.
- **OneSource Information Services, Inc.** in Cambridge, Mass., announced an agreement with American Banker, Inc. to create for Notes an electronic version of *American Banker*, a daily banking publication. The companies will jointly offer a monthly CD.

Taligent

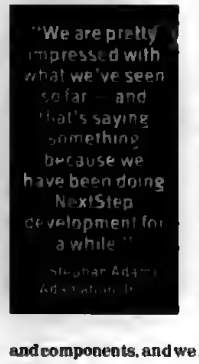
CONTINUED FROM PAGE 65

competitor for Taligent once TAE enters full-blown production.

"We are pretty impressed with what we have seen so far — and that's saying something because we have been doing NextStep development for a while," said Stephan Adams, president of Adamation, Inc., a small developer in Oakland, Calif., that sells a group scheduling product that will run under TAE next year.

"Because you can write an application once and have it run on multiple platforms, it gives small developers like us entree into other markets we otherwise couldn't afford to get into," Adams said.

Taligent executives said they are looking to work with information systems shops and other third-party developers to jointly develop components and/or small applications that enhance their internally developed applications.



"We have had some requests from [IS shops] wanting us to help them create their own frameworks and components, and we are looking into such a program now. They are going to need a lot of help," said Joe Guglielmi, Taligent's president and chief executive officer. TAE consists of some 80 frameworks, with another 17 or so expected by year's end, and customers will need education and help using TAE, he added.

[redacted]

CGI Systems, Inc. has introduced Pacbase/CS, an application development and integrated repository environment for large-scale client/server and legacy migration applications.

According to the Berwyn, Pa., company, Pacbase/CS lets users choose an industry standard or customized methodology and build a variety of application types to run on a mixture of operating systems, platforms, databases and client/server architectures.

The product includes options for managing the application development process through graphical user interface tools, methodologies for object-oriented and client/server systems and the ability to integrate legacy applications.

An object-oriented enterprise repository provides storage for all specifications of each application so it can depict the use of data and business processes in the organization.

Prices range from $80,000 to $300,000, depending on system requirements and the number of users.

▶ *CGI Systems*
(610) 993-8082

ACI US, Inc. has introduced 4D Open for Visual Basic, an application programming interface consisting of a set of Dynamic Link Libraries (DLL) for Windows.

According to the Cupertino, Calif., company, the product lets users connect to the company's 4th Dimension Server, which is a client/server database, and perform database functions.

Routines created with 4D Open for Visual Basic can be used in other Windows applications that support calls to DLL.

4D Open for Visual Basic costs $150.

▶ *ACI US*
(408) 252-4444

Greenbrier & Russel, Inc. has introduced ObjectStart for PowerBuilder, an object tool kit for Powersoft Corp.'s PowerBuilder.

According to the Schaumberg, Ill., company, ObjectStart for PowerBuilder was designed with modules for application generation, security and a class library.

Features include a framework for developing multiple document interface applications, a set of fully reusable graphical controls, a flexible security object and mechanisms for content-based navigation.

A fully developed sample application is included with the product.

ObjectStart costs $895.

▶ *Greenbrier & Russel*
(708) 706-4000

Arkos Design, Inc. has introduced Pegasus, an interactive, in-system logic emulator.

According to the Scotts Valley, Calif., company, Pegasus contains a built-in logic analyzer, instant access to all nodes and the ability to emulate devices at speeds of 3 MHz to 15 MHz, depending on gate utilization and logic structure.

The product can be used as a design verification tool and an interactive design and debugging tool, using three-dimensional parallel processing.

Pegasus, which is about the size of a PC, operates with a 486 PC using Microsoft Corp.'s Windows NT or with a Sun Microsystems, Inc. workstation.

Prices range from $36,300 to $115,000, depending on the number of gates. This price includes all hardware, software and logic emulation boards.

▶ *Arkos Design*
(408) 461-8100

RAD Technologies, Inc. has announced ScreenPlay 2.1, multimedia authoring and presentation software for Sun Microsystems, Inc.'s SunOS 4.1 and Solaris 2.3 and Hewlett-Packard Co.'s HP/UX 9.02 operating systems.

According to the Mountain View, Calif., company, ScreenPlay 2.1 creates multimedia presentations, training and live demonstrations including video, audio, animation and images.

The product can capture in real time and incorporate directly into the presentation live demonstrations of software running on workstations.

Prices start at $1,895.

▶ *RAD Technologies*
(415) 968-4800

Berard Software Engineering, Inc. has announced the Object-Oriented Analysis & Design Pilot Bundle.

According to the Gaithersburg, Md., firm, the product includes an object-oriented computer-aided software engineering (CASE) tool, user documentation, a publication on object-oriented design and selected slides from an object-oriented training course.

The CASE tool lets users create programming-language independent object specifications and generates formatted documents combining text and graphics.

The tool is limited to saving 15 models and 15 object specifications.

The Object-Oriented Analysis & Design Pilot Bundle costs $79.

▶ *Berard Software Engineering*
(301) 417-9884

Product shorts

AimTech Corp. has announced IconAuthor 5.0 Player for Macintosh, a product that enables multimedia applications created with the company's IconAuthor software to run on the Macintosh. The product lets users develop applications for multiple platforms simultaneously. Cost: $1,495. AimTech, Nashua, N.H. (603) 883-0220. . . . **Aladdin System, Inc.** has announced Stuffit Installermaker 2.0, custom installer development software. The product includes a point-and-click interface with integrated compression, font and desk accessory installation and support for international languages. A smart installer feature allows the creation of installers that identify the type of Macintosh system and then install the proper set of files. Cost: $100 per year. Aladdin Systems, Watsonville, Calif. (408) 761-6200.

LOOK INSIDE FOR
Practicing before producing with *Ford's* simulation tool. PAGE 76

A TOUGH ACT TO FOLLOW

by rochelle garner

It can be more difficult to continue developing innovative systems than to do it for the first time. Sustaining the ability to innovate requires a mastery of change management.

Tom Kochanowski

Well, you did it.

You cherry-picked the finest programmers from all of information systems, trained them in the most exciting new information technologies to reach the market and created a customer-support application that's beautiful to behold.

Even better, people are profitably using the fruits of your technical creativity. But that's no surprise. Your chief executive officer forced the system on all those midlevel managers who were afraid of the changes it's making in their departments.

Now all you have to do is move on and create that client/server sales database — integrated with your whiz-bang customer-support application — to help turn your company into a money-generating machine. Except there's one small problem: There's a good chance you'll go down in flames. It's hard enough to create an application of breathtaking significance, but it can be orders of magnitude more difficult to replicate its success.

The problem? Breakthroughs, by their nature, go against the established order.

In IS, breakthroughs can take many forms: killer applications that change how your company serves its market, new business processes that stitch together once-isolated departments and entirely new services that define fresh avenues of competition.

[Sustaining innovation means changing mind-sets: how IS is viewed and views itself, says Eli Lilly's Steven Cooper]

A tough act to follow, *page 72*

The new AS/400.
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The sleek black cabinetry of the new AS/400 Advanced Series holds much that is new—and much that is strikingly familiar. Its advanced architecture includes the traditional business-oriented strengths of AS/400, UNIX and PC environments, and then goes beyond them. Yet it's compatible with the thousands of proven AS/400 business applications that exist today. A wide choice of new systems lets any size business select precisely what it needs. Yet every system offers superb openness and interoperability, to make the move into client/server both seamless and painless. And to safeguard the computing investments you've already made. In short, this next generation in business computing blends sophistication, simplicity and economy. A combination any business will find basically indispensable. For additional information, call 1800 IBM-6676, ext. 643.

The new AS/400 Advanced Series from

A TOUGH ACT TO FOLLOW

CONTINUED FROM PAGE 69

But no matter what form, these IS efforts all share a common attribute. They are innovative, a condition defined as "developing a new product, using new process technology in a way that completely changes how business is conducted," according to Deborah Dougherty, a management professor who teaches innovation management at McGill University in Montreal.

Accent, please, on change, which is why innovation is so difficult to sustain.

"Often, companies will decide they need to innovate, then put together a process that works," Dougherty explains. "But it works not because they follow some well-established procedures but because they suspend the rest of the organization. The issue is changing the whole company so that innovation can become routine."

And the wider you cast the net in the organization, the harder it becomes to maintain that innovative mode.

"The members of a pilot project are hand-picked with a well-defined goal. Since they are hand-picked, the team tends to be the most adaptive to change," says Vaughn Merlyn, a partner at the Ernst & Young Center for Business Innovation. "That means you've stacked the deck for success. But when you face the rollout, you must deal with a much larger group who thinks the basic idea is flawed, who doesn't have the same level of skills as the pilot group and doesn't have the desire to change because change is threatening."

And, after all, there are just so many times your company can put itself on hold.

So how is your IS department supposed to sustain its reputation for building innovative systems? The answer, according to those whose livelihoods depend on repeat performances, is changing not only the behavior but also attitudes in and out of the IS organization.

PROFILE

Eli Lilly and Co.
Indianapolis

Managed health care is forcing the pharmaceutical industry to go on a new regimen. It needs to create innovative ways of conducting business and innovative systems that make it possible.

Steven Cooper, director of information architecture and planning at Eli Lilly and Co. in Indianapolis, is positioning Lilly's IS force to become a valued partner with the company's other departments. To reach this goal, he must do nothing less than change how Lilly views IS' role and how IS views its role.

"If all the business world sees is my thinking up ways to give them applications, then they see IS' role as much ado about nothing," Cooper says. "Only by changing their perception can we get them to work with us."

For the past three years, he's been pounding the notion into the IS staff that information — not applications — is the end product of the company's information system.

"I would argue that unless people view the product differently, there's nothing that changes their perception of value received," Cooper says.

It's a critical new mind-set, especially as the pharmaceutical giant recrafts its technology, data and information delivery across the enterprise.

It hasn't been easy. The first problem? Getting IS to adopt a new mind-set so it can carry out its role. To help create that new outlook on the IS mission, Lilly has reorganized its IS staff during the past year into what Cooper calls "centers of excellence."

> "I would argue that unless people view the product differently, there's nothing that changes their perception of value received."
>
> *— Steven Cooper, director of information architecture and planning at Eli Lilly and Co.*

"People do not report to specific managers in a traditional hierarchy," he says. "Instead, they work in centers built around their skills and are guided by coaches to provide career development, feedback, additional training."

Managers are responsible for the big umbrella-level process that is defined by the new architecture. They serve as the process owners — essentially, vice presidents of "X" process who make sure it is carried out as agreed upon.

Manager-level customer advocates, who once reported to IS, now act as account managers for the products and services to be delivered to business users. "They let us know how we're doing and whether we are delivering what we agreed to," Cooper says. "They also communicate what we are capable of providing to the broader business community."

Looking for a partnership

With such a foundation, Cooper hopes to create an organization that sees IS as a valued business partner. The concept has far-reaching ramifications. Currently, for example, Lilly is one of the leaders in diabetic care. What if, along with each vial of insulin, Lilly also delivered information on managing diabetes?

That's just one scenario, but the possibilities are endless. And it illustrates the fundamental importance of how the perception of value affects your ability to sustain innovation. Without that perception, IS professionals will be seen at best as workplace functionaries and at worse as responsible for expensive overruns and downright failures.

PROFILE

Carolina Power & Light
Raleigh, N.C.

Carolina Power & Light Co. has already achieved the kind of partnership that enables innovation to keep on going like the Energizer bunny. At the Raleigh, N.C., utility, major developments are headed by co-managers, one from IS and the other from the business community. We're talking *major* developments.

In the past three years, Carolina Power & Light has completed three massive IS projects, including a $44 million customer information system that tracks all customers for billing purposes and to see if there are new services the company can sell them. Through reduced labor costs and improved information management, the system has already paid for itself.

The company hasn't always been successful, though. Back in the mid-1980s, the electric utility was plagued by budget overruns, slipped schedules and disappointing systems.

"Because of our lack of successes, our CEO, CFO and COO said we have to do something differently," says Tom Dwyer, vice president of information services. "With that kind of support, I could pretty much come up with a new way of doing things and they would back me."

What he came up with was the notion that every unit both business- and IS-related *must* ante up the "best and the brightest" for dedicated application design and development. These people then must spend the next several months devoted exclusively to the project.

That becomes a challenge for the various departments as they struggle to maintain their own operations without their best staff members.

Part of the team

"That's painful since these teams need the person who's generally most central to the department," says Patricia Cease, director of special IS projects at Carolina Power & Light. It is also necessary. "Having a key leader [from each business group] help set direction creates buy-in and credibility from the entire organization," she explains.

> "Having a key leader [from each business group] help set direction creates buy-in and credibility from the entire organization."
>
> *— Patricia Cease, director of special IS projects, Carolina Power & Light*

And because only the best can play, it doesn't hurt team members either. Being named to a project is viewed as a beneficial career move, regardless of whether you work for IS or customer satisfaction.

How does a company reach such a nirvana of cooperation? By letting everyone from high-level managers to the rank and file work through the normal emotions of angst and resistance to change.

Letting it all out

The first step, say those who have helped architect a culture of innovation, is allowing for those pesky emotions.

"You have to let people recognize the vast gap they're facing, then give them the time to go through the normal stages of denial and anger," says Louis Dingerdissen, director of business process reengineering and vice president of Eastman Kodak Co. in Rochester, N.Y. "As they get to acceptance, they reach a point where they can break their own paradigms and facilitate change."

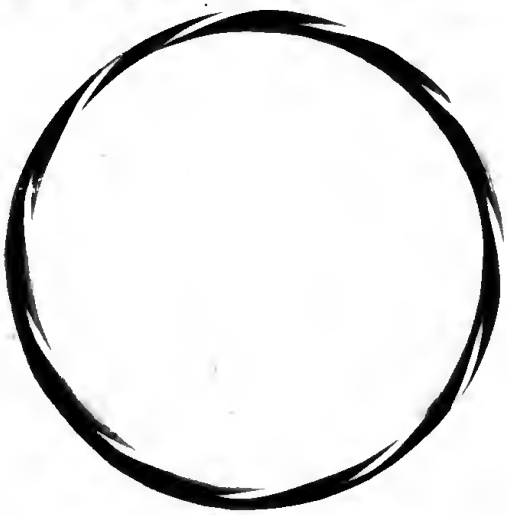
These things don't happen quickly. Dingerdissen says he's seen groups take from a few months to as long as two years to face the reality of massive change. The difference? How readily each group recognizes that the issue is survival.

However long it takes, it's critical to set aside sufficient time. Darlene Crane, president of Crane Consulting in Hayward, Calif., recommends giving people at least six months to comprehend what they face.

"This preparation is key because you have to shift people's mind-set away from incremental change to big change," says Crane, who helps IS organizations set new corporate standards.

A tough act to follow, *page 74*

WHEN YOU JUMP THROUGH ENOUGH OF THESE,



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A TOUGH ACT TO FOLLOW

CONTINUED FROM PAGE 72

Owens Corning
Toledo, Ohio

Shifting mind-sets to allow large-scale change can be a tall order — and a critical one. But with it, IS organizations can concentrate on strategic new systems.

At Owens Corning in Toledo, Ohio, management used a series of prototype projects to ease employees through change while centralizing its IS efforts. These prototypes, or pathfinders, help the organization discover the best way to achieve a larger goal — be it creating a killer application, a new service or a redefined goal.

"The pathfinder notion is there to help you draw a clear line of sight between the vision of where you want to go and where you are today," explains Larry Loehrke, manager of IS planning and development at Owens Corning.

But too many IS shops find themselves in a never-ending cycle of prototype after prototype.

Ernst & Young's Merlyn likes to tell a story that illustrates the problem. For several years, Merlyn ran a series of seminars on computer-aided software engineering benchmarks. After a while, he started to recognize the same faces showing up in different sites around the country to listen to the same lectures.

"I realized these people were in perpetual evaluation mode and perpetual pilot mode," says Merlyn, co-author of *Development Effectiveness: Strategies for IS Organizational Transition*.

Merlyn writes: "The principle that must be adopted is [that] change is made in manageable 'chunks' and that each 'chunk' provides a demonstration of the success of a defined part of the change.... The term 'Pathfinder project' is used to demonstrate these 'chunks' of change."

But ask any trailblazer, and you'll find that knowing where you want to go depends on knowing where you are when you start. To discover that information, Loehrke and others rely on the principles of total quality management (TQM).

"Then when we centralized, we had a reasonable understanding of how big the organization had to be," Loehrke says. "With TQM, you have a context for managing new technology."

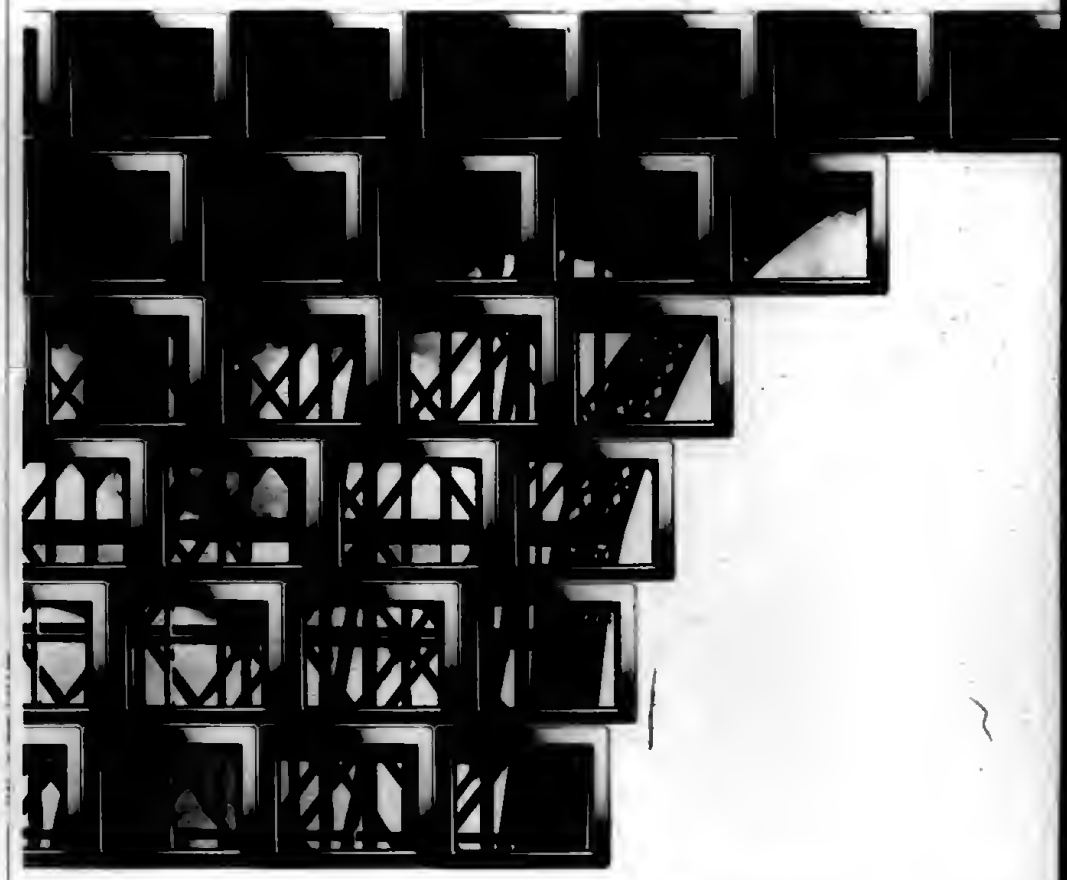
Others couldn't agree more. At Kodak, TQM provides constant feedback on the market, customer satisfaction and return on assets. Such measurements, by the way, provide the fuel for TQM's motto of continuous improvement.

"It doesn't let people rest," says Kodak's chief of change, Dingerdissen. "Those measurements also tell you when a gap gets so large that continuous improvement no longer cuts it. When that happens, then it's time to do another wrenching change."

Sound unpleasant? It probably is. But IS leaders must bite the bullet and build an organizational structure that will first mold and then support a new IS culture. To prepare themselves, IS staffers must be allowed to mourn the old, dead culture as they pass through the stages of grief to anger to acceptance. And IS must find ways to manage the change by breaking it into measurable chunks.

Sustaining innovation takes stamina. But if you don't have the stamina to sustain change, you can't sustain competition. Only the strong survive. ■

Garner is a free-lance writer in San Carlos, Calif.



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Calendar

JULY 17-23

Internal Consulting in Large Organizations: The Skill of Technical Liaison. Washington, July 18-20 — Contact: Continuing Engineering Education Program, George Washington University, Washington, D.C. (202) 994-6106.

Communications Opportunities in Health Care. Washington, July 19-20 — Topics: Generating new business through health care reform, networking requirements of managed care, telemedicine, home-centered care and other health care delivery trends, automated claims processing, computerized patient records and teleradiology. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050.

Conference for Artificial Intelligence Applications on Wall Street and Worldwide. New York, July 20-21 — Focus: "Developing and Profiting from Advanced Technologies Trading and Asset Management." Contact: IBC USA Conferences, Inc., Southboro, Mass. (508) 481-6400.

Configuration, Performance and Storage Management for Enterprise Client/Server Systems. Washington, July 20-21 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

JULY 24-30

Systems Software Conference '94. Orlando, Fla., July 24-29 — Contact: Computer Associates International Inc., Islandia, N.Y. (800) 925-2663.

Object World. San Francisco, July 25-29 — Contact: Rachel Winett, IDG World Expo, Framingham, Mass. (508) 820-8608.

New Directions in Cellular '94. Washington, July 26-27 — The conference will focus on the competitive outlook for cellular-based personal communications services (PCS), implementation challenges for time-division multiple access, code-division multiple access and global systems for mobile communications; wideband digital radio technology and economics; PCS spectrum allocation and the auction process; and Cellular Digital Packet Data user demand analysis, new antenna technology and fraud control. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050.

Sixth Annual Computer Security Incident Handling Workshop. Boston, July 26-27 — The workshop targets computer security professionals who must deal with security incidents and system vulnerabilities. Contact: Lawrence Livermore National Laboratory, Livermore, Calif. (510) 422-6361.

Essential Skills and Knowledge for Effective Incoming Call-Center Management. Seattle, July 26-28 — Contact: Incoming Calls Management Institute, Inc., Annapolis, Md. (410) 267-0700.

Windows World '94. Chicago, July 26-28 — Focus: Implications and impact of enterprise computing and the benefits of implementing a business-oriented information technology strategy. Contact: The Interface Group, Needham, Mass. (617) 449-6600.

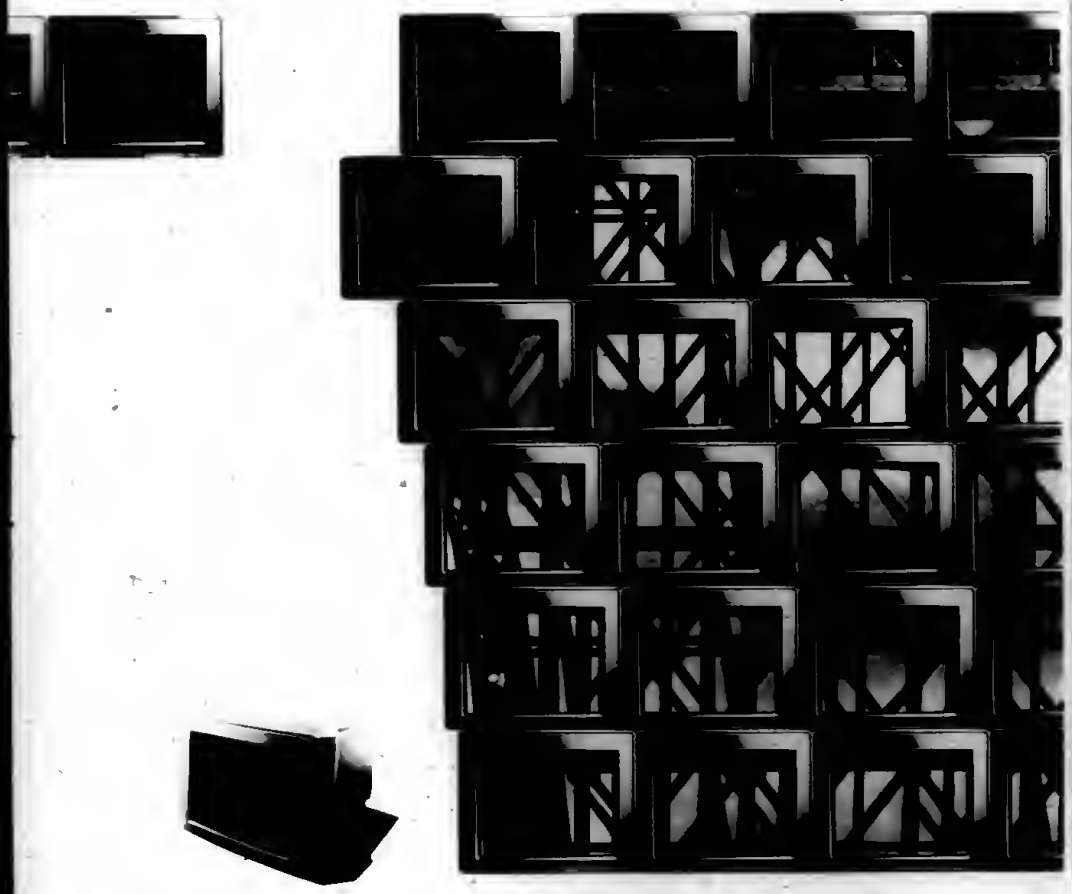
Managing Enterprise Networks '94 — A Survivor's Guide to Network and Systems Management. Boston, July 27-29 — Keynote speaker: David Passmore, president of Decisis, Inc. Topics include "Strategic Decisions: Choosing a Management Platform" and "People and Money: Management Issues in Network Computing." Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

The National Center for Database Marketing. Chicago, July 27-30 — Contact: Margaret Launzel-Pennes, National Center for Database Marketing, Stamford, Conn. (203) 358-9000.

JULY 31 - AUG. 6

Twelfth National Conference on Artificial Intelligence/Sixth Innovative Applications of Artificial Intelligence Conference. Seattle, July 31-Aug. 4 — Contact: American Association for Artificial Intelligence, Menlo Park, Calif. (415) 328-3123.

ATM Market Development: New Applications and Opportunities. Washington, Aug. 2-3 — Focus is on the business case for ATM-ATM vertical markets; carrier- and user-migration strategies; and lessons learned and interoperability challenges. Contact: Telestrategies, McLean, Va. (703) 734-7050.



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COGNOS
TOOLS THAT BUILD BUSINESS

Have you driven a *simulated* Ford lately?

By Ellis Booker

Ford Motor Co.'s new simulation tool for its 1995 Lincoln Continental production lets managers practice before they produce

Behind every gleaming 1995 Lincoln Continental that Ford Motor Co. rolls off its assembly lines this year are thousands of decisions and actions taken by hundreds of employees.

In the case of the newest Continental, Ford used a prototype software simulation tool to teach managers involved in product development how to make the very best choices each and every time.

"All great teams do something we don't do in business — they practice," says Nick Zeniuk, Continental business planning and launch manager in Dearborn, Mich.

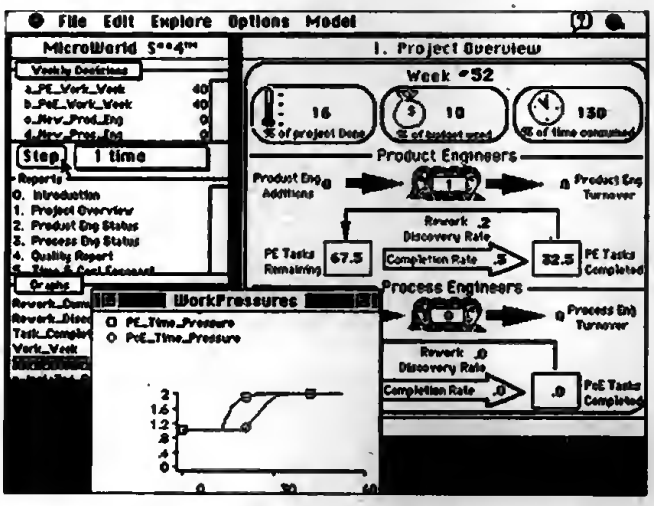
During the past three years, about 100 members of Ford's new product development team, comprising engineers, planners and marketing and finance personnel, have been exposed to the simulator, which was developed by the Center for Organizational Learning at the Sloan School of Management at MIT in Cambridge, Mass.

The simulator, coupled with new management strategies from Sloan, is helping Ford rearchitect its core business processes. "The corporation is being challenged to do more with less, faster," Zeniuk says. "This pilot is evidence we can do it."

The simulation game

Zeniuk says that for years his company and others in the auto industry have taught skills based on a crisis management model. "But we need permanent learning," he says, and software simulators may be the vehicle for this.

Best described as a game in which the variables of time, cost and quality interact, the simulator helps managers "understand the dynamic complexities of the issues they confront and the long-term implications of their decisions," says Jeff Clanon, executive director at the center, which is one of more than a dozen sponsored research centers at the Sloan School.



The MIT-developed project simulator helps teams of Ford managers understand the dynamic complexities of producing a new car

Games are a terrific place to explore new approaches to problem-solving, according to Don Seville, a graduate research assistant at the center and one of the simulator's authors.

"With a simulated world, it's OK to try, and more is sometimes learned by screwing up than by doing well," he says.

The Ford managers get a crack at the game on the second day of a two-day educational seminar. The simulator is used to practice the other tools — strategies for communicating information and making decisions — taught on the first day. The game is always played by a team of two or three managers or engineers, never individually.

More than a what-if tool

Unlike a simple "what-if" tool in a spreadsheet, the MIT software allows an employee, for instance, to pick a place to invest capital — say, in marketing or training — and simulate its impact on the financial performance over a 10-year span.

What distinguishes this simulation from a what-if tool is the dynamic relationship among the various elements in the simulated model.

"It not only shows final outcomes but lets you play with the impact of various kinds of interventions," Clanon says.

The simulation being used by Ford was built with the Strategy Support Simulation System, a development tool from MicroWorlds, Inc. in Cambridge, Mass.

Interestingly, Seville said the software developed for Ford was deliberately written to serve as a generic automobile design and production process simulator; it does not use any live Ford data.

"If the world looks too much like the thing, people get wrapped up in the details and miss the dynamic relationships," he says. But in its next iteration, the simulator will add some actual Ford data to more accurately mirror the real world.

"I think we can make it a little more complex, changing the terminology and adjusting the results to represent Ford's historical experience," Zeniuk says.

Although the simulation model and the associated educational seminar may have contributed to the "organizational learning that enhanced the performance of the team," Zeniuk says it's unclear how much it contributed to some of the awards and production records achieved by the newest Continental.

The software runs on a Macintosh at the moment, although a port to IBM PCs is under way. The plan, according to Clanon, is to market and distribute the tool with third parties. ■

Booker is *Computerworld*'s senior editor, Midwest. Allan E. Alter, senior editor, Management, contributed to this report.

Flight simulator for the telecommunications industry

Ford isn't the only company to use business simulation software to train its staff. Earlier this year, Pacific Telesis in San Francisco and Nynex Corp. in New York announced a project to develop a management "flight simulator" to teach information systems managers about the fast-changing telecommunications marketplace.

The goal is "getting managers to think differently; to focus on customers and the marketplace and to take a holistically integrated view of business," says William Nusbaum, vice president of organizational architecture design at Pacific Bell in San Francisco. "It's a huge challenge," Nusbaum adds.

The Telesis simulator, called Telesim, graphically displays the telecommunications business as a simulated world in three modules:

- Interior: A view of the world inside a telecommunications company (the manager's office, a hallway, meeting rooms and life around the watercooler).
- Landscape: A physical representation of a phone company's sales and service region (facilities and networks in cities and rural areas).
- Marketscape: A [illegible] representation of market demand and company/product response. This area also allows for strategic alliances, mergers and spin-offs.

Players use strategies, ranging from pricing network services to preannounced services to acquiring new technologies, to stave off competition or capture new markets and revenue.

Telesim is being created by Coopers & Lybrand Consulting's Information/Communications Group and software developer Thinking Tools. The company, a Monterey Bay, Calif., spin-off of entertainment and game maker Maxis, began developing "games" for corporate customers during the past few years [CW, March 8, 1993].

Telesim is scheduled to be released to Nynex and Pacbell later this summer.

— *Ellis Booker*

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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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(c) OS/2 (g) Windows
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The CW Guide to LAN/SNA Networking

LAN doorways to SNA data

Choosing the wrong path can mean poor performance and unhappy users

CHOOSING THE BEST STRATEGY TO GIVE LAN users access to mainframe data via IBM's SNA can be a treacherous game for information systems organizations. Cost and performance penalties can lurk behind seemingly simple vendor options.

This guide to LAN/SNA networking lays down the rules of conduct for making the choices that fit your organization's needs. Consultant Tom Nolle analyzes the three leading alternatives for LAN-to-SNA links.

Our Buyers' Satisfaction Scorecard surveyed more than 200 users of SNA gateways from leading vendors.

Our Firing Line spotlights user evaluations of CrossComm Corp., which offers its own unique approach to getting the LAN-to-SNA job done.

COMPUTERWORLD BUYERS SATISFACTION SCORECARD

USERS LIKE EICON TECHNOLOGY'S SNA Gateway for its superior reliability and speed.
Page 85.

FIRING LINE

CROSSCOMM'S ILAN XL ROUTERS warrant praise for ease of use and technical support, evaluators said.
Page 90.

Putting Technology

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LAN doorways to SNA data

By Tom Nolle

BECAUSE MILLIONS OF DOLLARS HAVE BEEN invested in IBM mainframes and data center applications, mainframes are likely to be the storehouses of vital business information for some time to come. However, creating and maintaining networking schemes to link LANs with SNA — IBM's primary communications method — poses numerous potential problems.

The most significant issue is cost. Pricing for LAN-to-SNA networking plans is extremely sensitive to a company's applications and network configuration.

Take, for example, the issues faced by a large corporation with numerous SNA and LAN sites. If the data traffic is such that there is no single preferred center of communications but rather periodic communications from one site to another, choosing a frame-relay, carrier-based solution would be extremely expensive under current price structures.

On the other hand, frame-relay and cell-based vendors could easily alter their pricing schedules so their solutions would be much cheaper than setting up a router-based solution. Changes in preferred traffic patterns could have the same effect.

Running any protocol over a network that was designed for another protocol is a compromise, and users unwilling to accept compromises in network performance continue to seek new LAN/SNA solutions.

In January, IBM announced a new version of its Network Control Program, communications software that runs on its 3745 communications controllers. With this version, user devices (called PU2s in SNA terms) can be connected directly to the 3745 via frame relay. Because frame relay's popularity has been exploding, this newest strategy will surely challenge current approaches.

In the meantime, there are three distinct traditional approaches to LAN-to-SNA connectivity. Each approach is shown in the accompanying chart and is listed below:

1. USE A GATEWAY.

A LAN gateway linking a company's LAN internetwork to its SNA network is the first solution most users have employed, and it remains popular.

Digital Communications Associates, Inc., Attachmate Corp., Eicon Technology Corp. and Novell, Inc. are all providers of gateway products. (For comparisons of user satisfaction and further details on this approach, see Buyers' Satisfaction Scorecard, page 85.)

2. TRANSPORT LAN TRAFFIC OVER SNA LINKS.

The second approach involves carrying LAN traffic over what is predominantly an SNA network.

IBM provides for this approach in its TCP/IP protocol support for the 37xx family of communications controllers, and there are two distinct families of products from third-party vendors that support an SNA-dominated interconnection strategy.

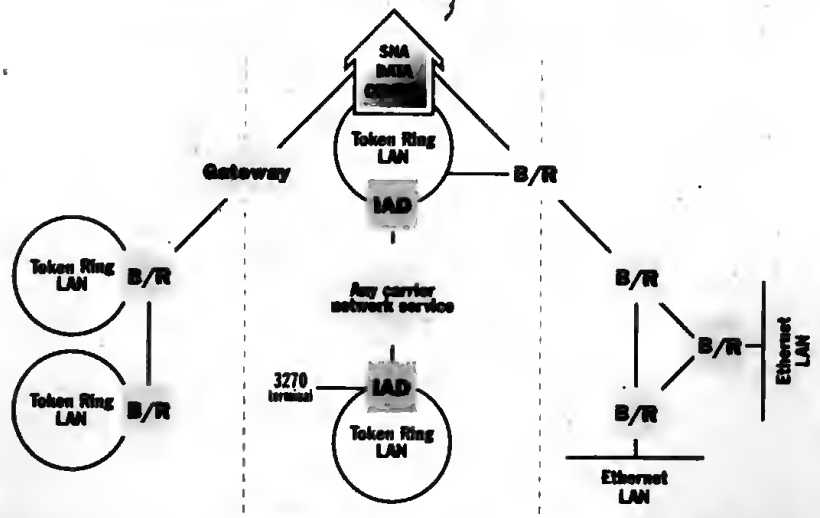
3. MOVE SNA TRAFFIC OVER LAN LINKS.

This network carries SNA over what is predominantly a LAN internetwork. Bridge and router vendors promote this solution.

Each of the three options is described in more detail in the following paragraphs.

Connecting to the glass house

SOURCE: CIMI CORP., VORHEES, N.J.



1 The Gateway Solution. The gateway translates message formats and communications protocols from the LAN to the SNA data center and vice versa.

2 The SNA Converter Solution. The SNA converter extracts SNA traffic from the LAN and passes the traffic to an identical device at the data center.

3 The SNA-Over-the-LAN-Internetwork Solution. Most standard routers can bridge SNA traffic. Some vendors offer proprietary schemes for true SNA routing.

1 USING A GATEWAY

SNA gateways are essentially terminal servers that emulate an IBM cluster controller such as the 3174.

From the gateway to the mainframe, the connection is made using SNA protocols and facilities. From the workstation to the gateway, the connection is supported over LAN protocols.

If a gateway serves more than one LAN, these workstation-to-gateway connections can be made only through internetworking devices such as bridges or routers.

In addition, gateways may limit the types of connections that can be made through them; many gateways support only IBM 3270 terminal emulation, for example.

However, gateways may also offer special benefits. For instance, they segregate LAN and SNA traffic, which simplifies network administration and planning.

Gateways can also make server print resources appear to SNA as network printers, allowing workers' printed reports to be directed to the nearest PC printer. This has been a particularly attractive feature of Novell's NetWare for SAA gateway, probably the most sophisticated such product available.

2 TRANSPORTING LAN TRAFFIC OVER SNA LINKS

IBM's TCP/IP over SNA has not been widely successful, but two third-party vendor approaches to building a joint SNA/LAN network with a strong SNA capabilities set have become popular.

The first is the **SNA CONVERTER**, a product that extracts SNA traffic from a LAN and transports it (over a wide-area network, for example) to a companion converter at the data center. There, the traffic is either delivered to a Token Ring LAN and from there to the mainframe or converted to appear as if it originated on one or more leased lines.

This class of products is also often used to convert local SNA terminals (the popular 3270 family) to LAN attachments so they can share a line back to the data center, a process called Synchronous Data Link Control/LLC2 conversion. The primary converter vendors are Hypercom, Inc., Motorola, Inc., Netlink, Inc. and Synn Research Corp.

The second strategy to carry TCP/IP over a network designed for SNA is based on **CHANNEL EXTENSION**. Channel networking vendors such as Computerm, Computer Network Technology and Network Systems Corp. offer facilities to interconnect mainframe computers by linking their I/O channels. The same networks may be used to carry some LAN traffic from site to site.

The SNA-dominated approach to LAN/SNA integration is most likely to be useful to companies that have a strong SNA commitment and relatively light LAN traffic. There are a lot of companies like that; surveys by CIMI Corp., a con-

LAN/SNA, *page 86*

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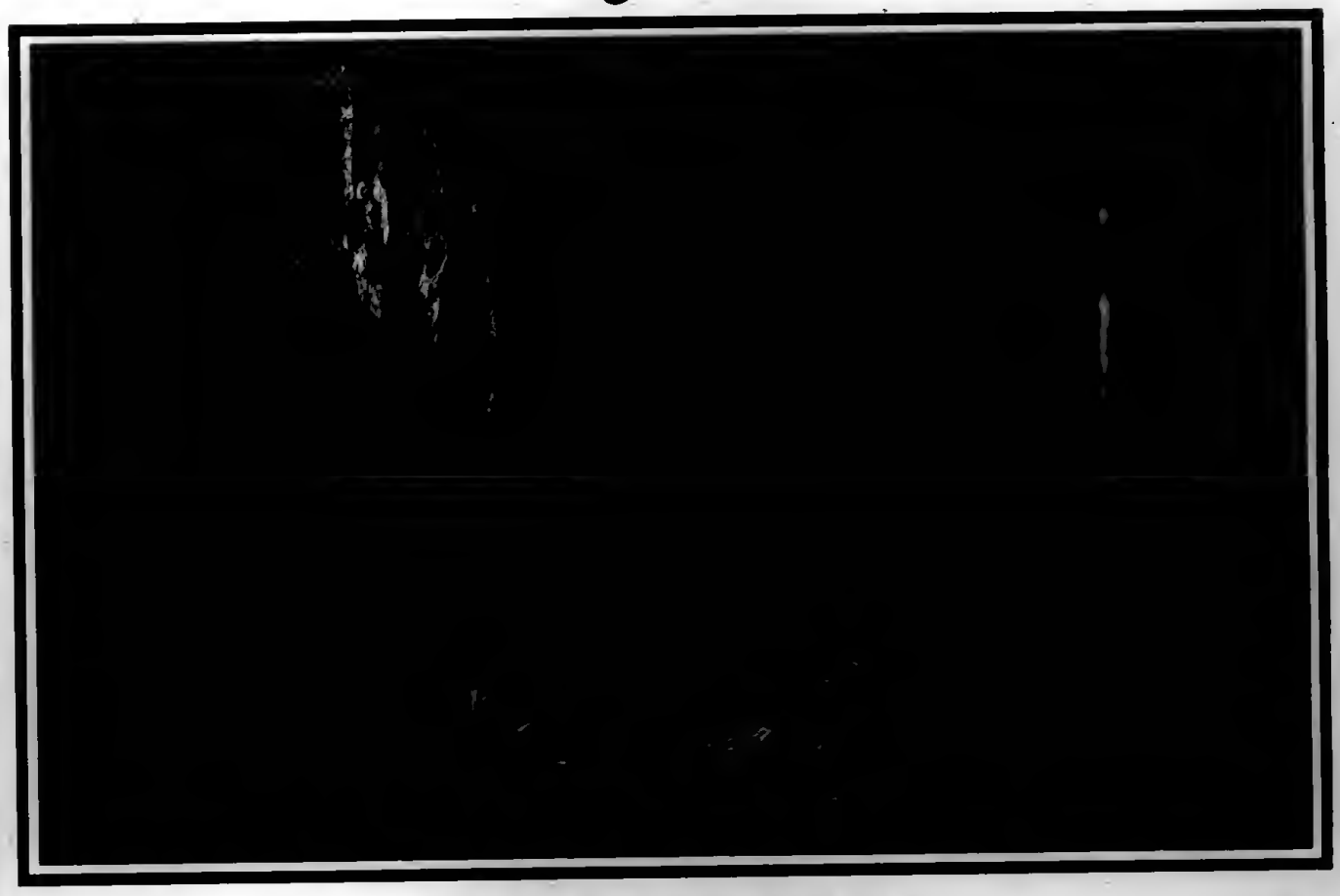

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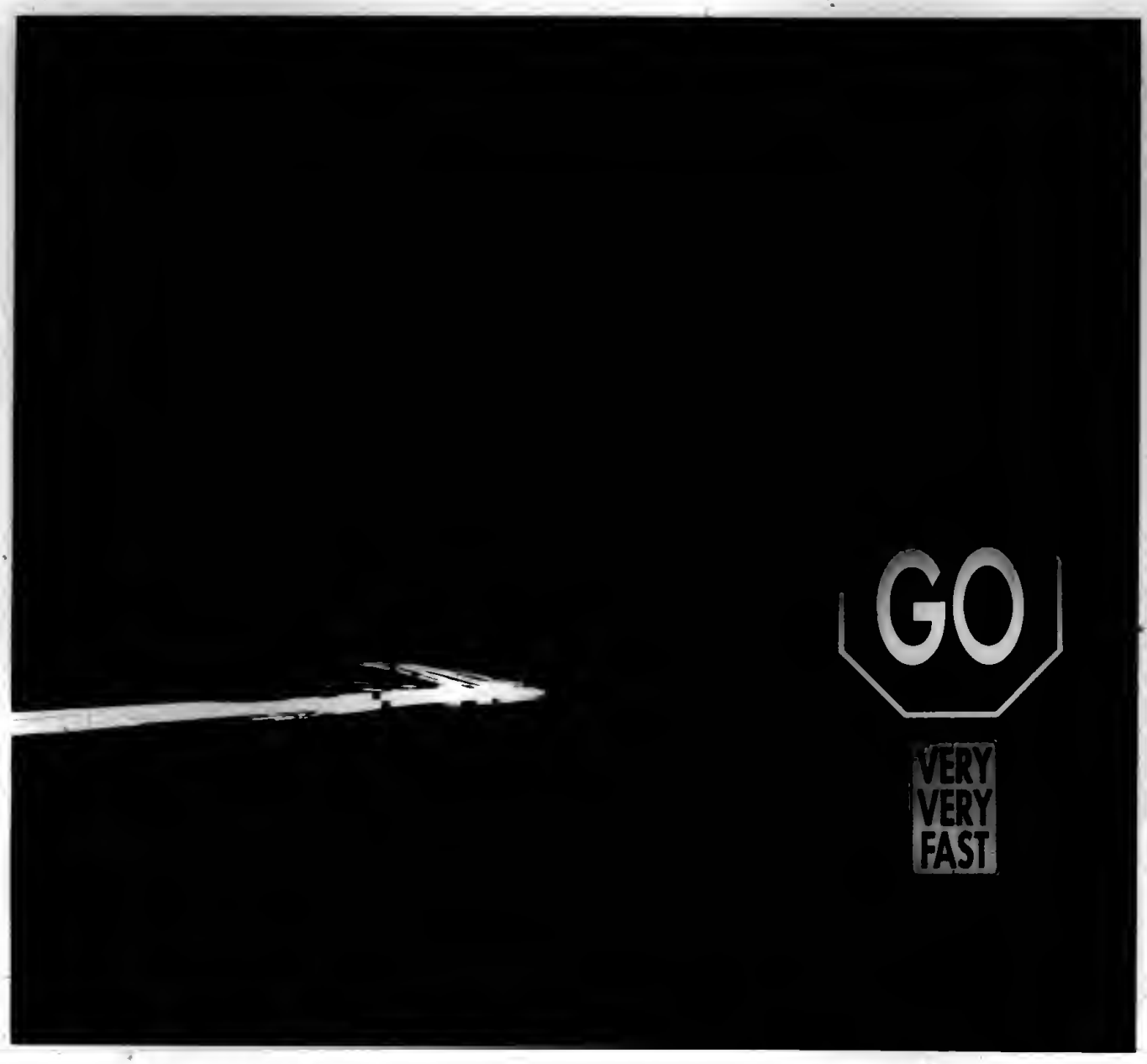

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EICON'S SNA GATEWAY	78
DCA'S IRMALAN	74
NOVELL'S NETWARE FOR SAA	74
ATTACHMATE'S EXTRA	72

How they compare

RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

COMPUTERWORLD BUYERS SATISFACTION SCORECARD

Rating categories	EICON'S SNA GATEWAY	DCA'S IRMALAN	NOVELL'S NETWARE FOR SAA	ATTACHMATE'S EXTRA
	Users said Eicon's edge in reliability stemmed from its superior failure recovery features.	IrmaLAN's familiarity to its long-time installed base was its greatest strength, according to users.	Users said NetWare for SAA is a complex product that would benefit from easier installation and lower initial pricing.	Attachmate's DOS product outscored its newer Windows version in all areas, including ease of use.
	RESPONSE BASE: 50 USERS	RESPONSE BASE: 52 USERS	RESPONSE BASE: 50 USERS	RESPONSE BASE: 55 USERS
COMPATIBILITY	7.9	7.8	7.9	7.5
RELIABILITY	8.0	7.3	7.6	7.3
EASE OF USE	7.5	7.1	6.9	7.0
FUNCTIONALITY	7.7	7.4	7.4	7.3
TECHNICAL SUPPORT	7.9	7.1	6.7	6.8
COST	7.7	6.9	6.7	7.0

By Tom Nolle and Derek Slater

As the charts show, Eicon Technology Corp.'s SNA Gateway easily topped the Buyers' Satisfaction Scorecard survey of LAN-to-SNA connectivity products. The Eicon product distinguished itself in one of the areas users said was most important to them: reliable data transmission.

Despite its high score, the Eicon SNA Gateway is not the most complex or broadly useful product in the survey. It is straightforward software that works with a variety of LAN operating systems and SNA communications protocols.

However, Novell, Inc.'s NetWare for SAA server software and Digital Communications Associates, Inc.'s (DCA) IrmaLAN/EP both attempt to incorporate a broader range of features. (Eicon also offers a more ambitious product, the InterConnect Server for NetWare, which includes routing capabilities as well as a gateway.)

NetWare for SAA established the benchmark in terms of features and probably validated the SNA gateway category by virtue of its popularity. It addresses issues such as network administration, application programming interfaces and connectivity options (although it runs only with NetWare, while other server products support NetBIOS and Banyan Systems, Inc.'s Vines). Its complexity, plus the fact that it is often used in accounts where users may not be technical, likely contributed to its score. This is borne out by its marks in ease of use.

DCA's IrmaLAN/EP software, like NetWare for SAA, resides on the LAN server and requires the use of additional terminal emulation software. DCA has been in the mainframe connectivity business for a long time, and users said their familiarity with DCA's products is one of the key strengths of IrmaLAN/EP.

Attachmate Corp.'s Extra (with the 3270 gateway option) is oriented more toward the end user; the Extra emulation software can be used with NetWare for SAA on the back end. Users' choice of front-end emulation software clearly affected their view of the gateway option. About 60% of Attachmate respondents used the DOS version of Extra, which beat the newer Extra for Windows 4.0 in all ratings categories.

In a recent announcement that could be significant for gateway users and vendors, Novell teamed with Proginet Corp. to create software that lets SNA systems run IPX protocols natively. For most users, though, the Proginet announcement is not earthshaking. The main significance is the ability to centralize certain management processes. However, research has found that while users demand such management tools, they rarely put in the effort necessary to implement them.

Vendor contact information: Attachmate: Bellevue, Wash. (206) 644-4010; DCA: Alpharetta, Ga. (404) 442-4000; Eicon: Dallas (214) 239-3270; Novell: Provo, Utah (801) 429-7000. ■

Nolle is president of CIMI Corp., a Voorhees, N.J., consultancy. Slater is a *Computerworld* assistant researcher, features.

What's important in SNA gateways?

AREAS MOST CRITICAL TO USERS IN ORDER OF IMPORTANCE
RESPONSE BASE: 217 USERS

1	COMPATIBILITY	•Mainframe compatibility •LAN compatibility •Compatibility with applications
2	RELIABILITY	•Consistent data transmission •Failure recovery
3	EASE OF USE	•Overall ease of use
4	FUNCTIONALITY	•Terminal/Printer emulation •Efficient operation •Speed of operation
5	TECHNICAL SUPPORT	•Overall technical support
6	COST	•Cost of acquisition and maintenance •Value for the dollar

LAN doorways to SNA data

CONTINUED FROM PAGE 80

sultancy in Vorhees, N.J., indicate that most large businesses base 60% or more of their wide-area data traffic on SNA.

3 TRANSPORTING SNA TRAFFIC OVER LAN LINKS

LAN internetwork transport of SNA has received the most attention recently. There are several ways to handle this.

IBM's own implementation of PC communications with mainframes is based on the connection-oriented form of the Logical Link Control (LLC) protocol, called **LLC2**. Because this is a part of Open Systems Interconnect (OSI) Level 2, it is not directly routable (routers operate at Level 3) and so must be bridged.

Bridging has created problems with SNA transport over LAN internetworks. IBM's Token Ring bridging technology is based on source routing, where the sender provides a list of gateways through which the traffic must pass on the way to its destination. The length of the list limits the number of "hops" traffic can take.

Bridging is also inefficient in its response to network failures and link congestion, and bridged networks can become congested with broadcast traffic because bridging creates what is essentially a flat "super-LAN" structure.

But many users are not bothered by these bridging problems. Corporate networks are often logically structured as a "star of stars," with branches linking to a regional center and multiple regions linked to the company's headquarters.

Because branches in different regions often have no reason to interact, this style of network has fewer potential hops, and a good filtering feature set in bridges can limit broadcast traffic. IBM's SNA interconnection strategy has long been based on bridging.

Router vendors may **USE BRIDGING TO CREATE SNA CONNECTIONS** over an internetwork and to route protocols such as TCP/IP or SPX/IPX, which have OSI Level 3 protocols. Nearly all routers sold today have this capability. But most router vendors and many users of large LAN internetworks want the network route control and broadcast "fire wall" benefits of routers to be available to SNA as well. As a result, router vendors such as CrossComm and Proteon, Inc. have long provided proprietary strategies for transporting SNA in a routable fashion.

Another option to permit routing of SNA is **ENCAPSULATION OF SNA IN TCP/IP**. IBM introduced a standard strategy for SNA encapsulation in its Data Link Switching proposal to the Internet Engineering Task Force (RFC 1434). Data Link Switching makes a TCP/IP internetwork appear to be a single hop in a source-route bridge connection. It extends the protocols that are used to discover addresses on LANs across the internetwork without broadcasting to every station, even those that are not receiving SNA traffic.

The intermingling of all these protocols can create problems for SNA, however. Most SNA applications were designed with very specific response time objectives, while LAN internetworks are based on connectionless protocols whose performance is not deterministic. Early SNA routing supporters such as CrossComm and Proteon provided special prioritization or bandwidth allocation techniques to ensure more stable SNA performance, and leading vendors such as Cisco Systems, Inc. are now offering similar capabilities.

IBM's solution to the problem of mingling SNA and LAN traffic is to **EQUIP ROUTERS WITH SPECIFIC SNA ROUTING** capability. Advanced Peer-to-Peer Networking (APPN), the peer communications form of SNA, can be licensed from IBM or other third-party firms (Data Connections Ltd. in the UK, for example). APPN's Network Node software lets routers create and route SNA sessions and preserve the performance determinism SNA users have come to expect. IBM implements APPN/Network Node on its 6611 router, and most major router vendors have promised to support APPN in the near future.

Transporting SNA over TCP/IP is of greatest value to firms that are already committed to TCP/IP on a large scale. APPN is most useful to businesses that plan to develop their future distributed computing applications based on IBM's protocols and application programming interfaces. Many users have not solidified their future distributed computing and network policies to the point where they can select either option. Thus, router vendors are increasingly providing a wide range of SNA solutions to attract the wary user.

ADDITIONAL FACTORS

There are other issues you should consider when choosing your LAN-to-SNA connectivity method. One is the future of your SNA applications. If you are planning to downsize these programs to smaller platforms, it makes sense to standardize the networks on TCP/IP and force-feed SNA through it for the time being. But if the mainframe will be up and running for the foreseeable future, this strategy of harmonizing SNA and TCP/IP at OSI Level 3 is less desirable.

The bottom line is, one size does not fit all when giving LAN users access to mainframe data via SNA. Proceed carefully with a clear view of your organization's traffic patterns, protocol biases and future needs. An intelligent strategy will save time and expense and help you pick the right set of products.

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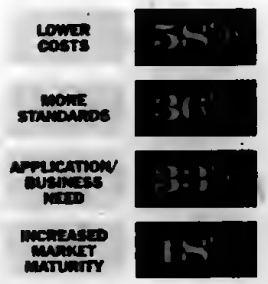

ATM, frame relay open new doors

WHEN YOU'RE STEERING DATA THROUGH A NETWORK, a lot depends on the protocols and standards you use. Much of today's traffic is governed by the International Standards Organization's OSI Level 3 protocol — or it used to be.

Frame- and cell-based protocols such as frame relay and Asynchronous Transfer Mode (ATM) are often called "smart wire" protocols because they create multiple "virtual circuits" on a single user-to-carrier interface, each appearing as though it were a dedicated wire linking the user of that interface to a partner user or server in another location.

The nodes that make up a frame or cell network perform the switching and routing functions needed to get data for each virtual circuit to its proper destination, below the traditional routing layer. Shortly, when frame and cell networks support permanent virtual circuits only, the networks will link protocol-specific devices on each premise. This would limit protocol-specific data routing to the edges of the frame/cell network.

At the branch location, an access device puts the traffic on the correct virtual circuit: the SNA one or the LAN one. No protocol has to be carried over another or over a network designed for another; there are no service quality compromises needed. SNA converter vendors are already making the product changes needed for this type of edge-of-network traffic steering.

You can expect more dramatic changes as frame and cell networks evolve. When frame relay and ATM begin to support switched virtual circuits, users will be able to "call" servers or other users in the same way they make voice calls today. Because those calls will link desktops and not just premises, users will be able to negotiate whatever protocols they find convenient for use on their switched virtual circuit. Users would employ directory servers to get the addresses of their partners for these calls.

This probably won't happen until ATM LANs become pervasive. But the elimination of Level 3 routing and the devices that support it is a real consequence of the acceptance of any frame/cell architecture with switched virtual circuit support. In such a future, LANs and routers may join SNA equipment as legacy devices. — *Tom Nolle*

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Firing Line: CrossComm's ILAN XL routers gain high marks for ease of use, functionality

CrossComm's ILAN XL routers

- CrossComm's routers rated very high in ease of use, technical support and failure recovery.
- The evaluators also said they were more expensive than competitive products and that compatibility with existing applications was about average.

Announced last year, the ILAN XL series from CrossComm Corp. in Marlboro, Mass., comprises five router units and one integrated branch node.

The routers, which include the XL 2, XL 5, XL 10, XL 20 and XL 80, all run the firm's protocol independent routing (PIR) software. Because PIR software operates on the medium access control layer (Layer 2) of the Open Systems Interconnect model, ILAN bridges support a variety of SNA protocols on the mainframe. LAN protocols such as NetBIOS, IPX, TCP/IP and Banyan Systems, Inc.'s Vines are also supported.

Depending on the unit, features and functions of the ILAN series include routing; data service unit/channel service unit; data compression; remote monitoring; Synchronous Data Link Control-LLC conversion; and LAN and wide-area network ports. All units are equipped with RISC microprocessors (not Intel Corp. CPUs as in the previous ILAN series) and boast numerous fault-tolerant features.

Participants in this evaluation include technical managers at a telecommunications firm, a software company, an insurance company and a trucking concern.

The format for this evaluation was created with assistance from Howard Rubin Associates and Technology Investment Strategies Corp.

MAINFRAME COMPATIBILITY

All evaluators used IBM mainframes. Three sites had one or more 3090 models, while the transportation concern used an ES/9000 system. A variety of midrange systems were supported including IBM's AS/400 and Digital Equipment Corp.'s VAX. The evaluators reported no difficulty in supporting any SNA protocol.

Trucking firm: "It is exactly what we were expecting, and we looked at almost all of the big players."

LAN COMPATIBILITY

LAN support included NetBIOS, IPX, TCP/IP and Vines, the evaluators said. LAN sizes ranged from 400 to 4,000 end users. They reported high compatibility with existing LANs.

FAILURE RECOVERY

The evaluators said recovery was bolstered by the CrossComm Internetworking Management System, which does provide some failure identification utilities.

Software firm: "In any session disruptions, it will search and find alternate [transmission] routes through its microcode capability."

EASE OF USE

Giving the ILAN XL series an extremely high rating for ease of use, the evaluators said installation and configuration were simple operations that required little effort. They added that the PIR software made it easy to upload complete software configurations from older routers to upgraded systems.

Insurance firm: "When you know what you're doing, it will take half an hour to an hour to enter all parameters and go through the menus."

EFFICIENT OPERATION

The evaluators averaged approximately 40 CrossComm routers per site, with approximately six of the newer ILAN XL systems. They said support, maintenance and upgrading required roughly 20 to 30 hours of labor per week.

TECHNICAL SUPPORT

The CrossComm technical support staff won rave reviews from the evaluators. They said CrossComm engineers were competent and effective in troubleshooting and installation operations. They also said CrossComm made great efforts to provide timely responses and rapid problem-solving.

Software company: "Our account manager ran roughshod over [CrossComm] corporate to get things done."

COST

The ILAN XL series was reported by the evaluators to be slightly more expensive than products from competing vendors, particularly those from Wellfleet Communications, Inc. and Cisco Systems, Inc.

Insurance firm: "I'd like to see [the price] lower, but it's the only product I know of that implements frame relay for NetBIOS." ■

Written by Computerworld *senior editor Garry Ray*

CrossComm's ILAN XL series

RATINGS ARE BASED ON USER EXPECTATIONS ON A 1-TO-5 SCALE, WHERE 1 IS BELOW EXPECTATIONS AND 5 IS ABOVE EXPECTATIONS. RATINGS ARE PRESENTED IN ORDER OF IMPORTANCE TO USERS.

3.9	OVERALL RATING
3.8	MAINFRAME COMPATIBILITY
3.8	LAN COMPATIBILITY
3.5	COMPATIBILITY WITH APPLICATIONS
3.3	CONSISTENT DATA TRANSMISSION
3.8	FAILURE RECOVERY
5.0	EASE OF USE
4.0	EFFICIENT OPERATION
3.8	SPEED OF OPERATION
5.0	TECHNICAL SUPPORT
3.3	COST OF ACQUISITION AND MAINTENANCE
3.5	VALUE FOR THE DOLLAR

CrossComm responds

CrossComm responded to issues raised in this evaluation:

COST: When we announced the XL 80, it was extremely competitive on price. Some of the branch office products weren't quite as price-competitive. When customers have an installed base of our older ILANs, they move totally to the newer ones. XL 80 has a parallel architecture and RISC processor. Did we design it to be the lowest-priced processor? Absolutely not. We designed it to have high price/performance.

CONSISTENT DATA TRANSMISSION: Sometimes customers get an early release of the processor. With any product as complex as the XL 80, it is conceivable that early users would have problems. Possibly this would come from early releases of the software. Since last year it has become very stable. This has been one of the smoothest rollouts.

LOUSY DESIGN MADE EASY

By Alice LaPlante

Usability maven Donald Norman says it doesn't take much to frustrate and alienate users. Just be inconsistent and unintelligible when designing software and systems.

David Powers

UP CLOSE AND PERSONAL DONALD NORMAN

Education

•

•

•

Teaching

•

•

Books

•

Favorite bad design targets

DONALD NORMAN has a thing about doors — whether they open in or out, whether someone approaching a door knows instinctively to push or pull it without reading posted instructions or whether someone has to "experiment" shamefacedly while amused witnesses look on.

What does this have to do with computers? A lot, thinks Apple Computer, Inc., which lured Norman away from the academic world to bring a fresh usability eye to its hardware and software design teams. And Norman, 58, is eminently qualified: Besides his expertise in electrical engineering and psychology, he is the author of the bible of usable designs, *The Design of Everyday Things* (Bantam Doubleday Dell, New York).

While Norman holds the title of Apple Fellow, the company's most senior and honored research position, his is not an ivory tower job. "Today's computers are still much too technical and complicated," says Norman, who works on the product side of Apple, on hardware and software that will hit the streets within the next year or two.

"I still spend far too much time every day just trying to get my computer to run smoothly," he says. "That shouldn't be necessary."

Sometimes it seems to Norman that software and systems design-

Norman, *page 92*

CONTINUED FROM PAGE 91

ers, whether they are in-house or work for vendors, exist to frustrate and annoy users. In fact, all designers have to do is design by the following rules and they can guarantee failed software and systems.

MAKE FEATURES INVISIBLE

Provide users with a blank screen, a hidden on/off switch or unlabeled buttons. Make sure you don't even hint at how to begin operations.

If you possibly can, make things inaudible as well. Eliminate all sound-related clues that tell users whether something is working or not.

Designers mistakenly believe that to strive for absolutely quiet operations is a good thing. "Some modern automobiles are so quiet that their owners can't tell if the engine is running and try to start a car that's already on," Norman says. But users like some natural feedback. "A little bit of background sound can be very helpful. If an operation is taking a long time, it's valuable to hear your hard drive clicking away."

Norman insists on keeping these natural feedbacks intact and, if necessary, adding them back in even if the designers have the capability to build absolutely silent machines.

BE ARBITRARY

Assign odd combinations of "Control," "Alt," "Shift" and function keys to do routine tasks. If you're working with a graphical user interface (GUI), crowd the screen with complicated pull-down menus and buttons.

Granted, Norman says, the emergence of GUIs has helped, but a pretty interface does not make for usable software. Does it really help to have nine separate pull-down menus on a screen or dozens of icons, each representing a different program item hidden within multiple program groups?

In fact, Norman takes issue with the metaphors behind today's GUIs. "The window-based structure is horrible — all those little buttons you're supposed to click on," he says.

"I want to move to a situation where we don't have to use computers. I want to get rid of computers. Instead, we should have tools appropriate for each task we do — not this macho piece of technology that sits on the desk," Norman says.

Norman even questions the need to save and delete files. "I look around my office and I don't have files; I have stacks of papers, magazines and books. I have working documents. I don't think of them as files. The whole concept of files and file management is embedded in the technology, not in the way we actually work," he says.

For example, Norman says, Apple's Newton does not use the file metaphor. "There are no files, no Save command. You write notes on a 3- by 5-in. card, and when you're finished, you wave your pen and the note goes away in a puff of smoke," he says.

Of course, the Newton metaphor won't work for tasks requiring more storage, but "it's an example that you don't really need a file structure to use a computer," Norman says.

LaPlante is a free-lance writer in Woodside, Calif.

MAKE OPERATIONS UNINTELLIGIBLE

All you need for incoherent operations are idiosyncratic language and uninformative error messages.

Norman says he continually stumbles across meaningless questions and inane error messages.

"I was trying to print out a complicated document yesterday and part of the way through, the program stopped and asked, 'There's not enough memory, would you like to increase the amount of memory?' " Norman says.

"My question is, why are you even asking? Would there ever be a time when I would say no?"

He has also come across error messages that say, in effect, "the computer is about to destroy everything you've been working on today. Is that OK?"

David Powers

IGNORE CREEPING FEATURISM

Think only about packing tons of power and functionality into creations. Don't take into account that users might use only a small percentage of what is already there.

"It's way too complex," Norman says. "Look at the monstrous menus on Macintosh or Windows applications. There are eight or nine pull-down menus, each with dozens of items — I counted. One of the menus on one of the programs I use has 40 items on it. That's silly.

"It's as if to do some woodworking, I would have to buy the entire hardware store. Most [designers] don't get the point. They think that more — and more powerful — technology is the answer," he says.

BE INCONSISTENT

It's bad enough giving users an application that asks them to do something they could never figure out on their own (for example, that pushing Control-Shift-F12 prints a document).

But add insult to injury by making sure that printing within this application differs from the way users print in other applications.

Fortunately, this inconsistency is getting better, Norman says. Most GUI-based applications, for example, use F1 for Help. However, even landed "standards" such as this should be questioned, he says. "Wouldn't it be nicer to have a key labeled 'Help'?"

"Sometimes, we put all our energy into the wrong places," Norman adds.

BE IMPOLITE

We've all seen it: "Unrecoverable system error. Terminating all applications." Gee, thanks.

One of Norman's favorite error messages comes from his communications package, Qualcomm, Inc.'s Eudora electronic-mail software for TCP/IP networks, which makes light of the rude finger-pointing tone of certain error messages.

"It says, 'Don't blame me. It's that pesky communications tool box acting up again,' " Norman says. "I like that."

MAKE OPERATIONS DANGEROUS

Design systems so that a single erroneous action can destroy invaluable work. Also, make sure to avoid logical constraints so that user errors are encouraged, not eliminated.

For the most part, cautionary messages built into today's applications simply don't help, Norman says.

For example, after asking to delete a file, many computer applications ask, "Are you sure?" But Norman argues that most systems ask this type of question at the wrong time.

Generally, users will immediately indicate 'yes,' of course, they want the files erased. But they are confirming the *function*, not the file name. It may be later that they realize they erased the wrong file.

If there's any doubt at all whether an operation may destroy important work, the computer shouldn't execute it. For example, a deleted file or program should automatically go into a safe holding area for a specified time so users can retrieve it.

"I'm looking forward to a time when sitting down to operate a computer is as intuitive as sitting behind the wheel of a car." — Donald Norman

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SUPPORT STUMPERS

Even small, well-defined client/server projects struggle with support

By Julie Hart

When Great West Life and Annuity in Englewood, Colo., began its move from legacy mainframe systems to a client/server environment, it had the luxury of slowly growing its network — now at about 800 nodes — over four years. It was also able to start with an application that wasn't mission-critical.

Even so, supporting a client/server network wasn't that simple. It's "a little more complex than we thought," says Jens Pedersen, vice president of telecommunications at Great West Life. "We have to be more cognizant of network relationships such as Ethernet, PC-NFS and TCP/IP."

In fact, living up to its open promise, the client/server infrastructure comprises dozens of distinct components provided by a slew of vendors. The result is a system that is often difficult for support staff to troubleshoot. "In the client/server world, there's no end to your choice of vendors," explains Shaku Atre, president of Atre Associates in Port Chester, N.Y. When setting up a client/server network, Atre says you should expect to deal with five or more vendors.

"You have to know enough about your network infrastructure to not just call each vendor and say there's a problem," Atre says. "To get the help you need, you must be as specific as possible." That requires technical skills — from client/server application design to network relationships.

In addition, as you begin to put multiple vendors' products together, it's only a matter of time before you encounter interface problems, according to Atre. For example, if your networking vendor upgrades its software from Version 3.0 to 3.5, but your database vendor hasn't moved forward yet, you may run into some incompatibilities and have to remain at 3.0 until the database vendor upgrades its software.

A glimmer of hope

But the picture isn't all bleak. Many of the skills you've honed over the years in the mainframe world still have value in the client/server environment.

"A number of the skills are transferable," Atre says. If a client/server user complains that performance isn't up to par, for instance, you troubleshoot the same way as before by looking at application design, but you ask different questions. Instead of asking yourself how clean the code is, ask yourself if there are too many screens or icons.

Regardless of your skills, if you have the latitude, you should move to client/server slowly, Pedersen recommends. Because Great West Life started out with only six users, Pedersen says his group got away with some sloppiness that otherwise wouldn't have been acceptable.

"We were able to learn from our mistakes as we went along," Pedersen says. "Too many companies find something in client/server that excites them and then take off, not taking the time to learn first." This shotgun approach can lead to other support problems. ■

Hart is a free-lance writer in Sunnyvale, Calif.

USER FREEDOM: At what price?

One dilemma is whether to implement software standards at the desktop level when moving to client/server. Some companies let users pick and choose their applications, creating a potential minefield for future support.

"We have up to 6,000 desktops," says Howard Orlick, vice president of application downsizing at The Chase Manhattan Bank NA in New York. "We knew when we started moving toward client/server that we had to have standards."

However, the Federal Reserve Bank in Richmond, Va., which has been moving from legacy IBM mainframes to client/server for the past 18 months, lets users select their own desktop software. "That's one of the reasons we moved to client/server," says F. Champe Granger, senior analyst.

But Granger says he expects that as the system grows, they will eventually be forced to generate a restrictive software list. "So far, we can answer users' questions. But if they start using too many different packages, we probably won't be able to get trained fast enough."

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Not for Novices

Training courses for the Common Object Request Broker Architecture are slowly popping up. To ensure success, participants are advised to know C++.

By Alan Radding

Are you ready to play in the object technology big leagues? In this game, objects must communicate with other objects across different platforms and languages.

The problem is the heterogeneous, distributed systems environment. If object technology is to become truly effective, objects must find and use various services and resources that are themselves objects, regardless of the platform and language used in building those other objects.

The solution is middleware for objects. Middleware maintains a database of information about various object-based network resources and services. It takes an object's generic request for a service or resource, identifies the object that can fulfill the request and translates the request into a form the object can understand and to which it can respond. It then returns any results to the requesting object. Ideally, the process is transparent.

In the middle

In the object world, this middleware is the object request broker. To enable different vendors' object request brokers to speak to one another, the Object Management Group (OMG) was formed to develop appropriate standards, in particular the Common Object Request Broker Architecture (CORBA). "CORBA is a message-handling system for objects. It is the cleanest way to build truly distributed applications," says Bill Hoffman, president of Object World Corp., a subsidiary of the OMG in Framingham, Mass.

In fact, there are two ways to master object request brokers: Learn the object request broker provided by a vendor or learn CORBA. By learning CORBA first, trainers say, it's easier to pick up the specifics of any vendor's implementation.

Often the two approaches can be combined. Susan Banks, a programmer at BBN Systems and Technologies in San Diego, took CORBA training as part of a team working on a project with Draper Laboratory, Inc. in Cambridge, Mass. Draper picked Iona Technologies' Orbix as its object request broker. As a result, "the course was about CORBA, but the emphasis was on Orbix," she explains.

Fortunately, there is a small but growing training industry sprouting up around CORBA. Semaphore in North Andover, Mass., and Soft Machine, Inc. in Carlisle, Mass., have emerged as leading CORBA training providers. In addition, individual vendors, such as Digital Equipment Corp., Hewlett-Packard Co. and Sun Microsystems, Inc., provide their own object request broker training, often through such training providers. The Cushing Group in Nashua, N.H., markets training provided by Soft Machine.

To date, most of the training has been customized for particular companies. Generic, open enrollment training programs from Semaphore and The Cushing Group are just getting off the ground.

Overview classes are designed for architects and managers who need general familiarity. Three-day programs typically focus on one part of the object programming equation, such as the client side. Five-day programs are designed for those building complete distributed object applications using CORBA technology and address both the client and server portions of the application.

The five-day courses are not for novices. The typical student is a software engineer working in distributed, heterogeneous systems, says Brad Kain, manager of consulting services at Semaphore.

"Having some C or C++ experience is extremely helpful. You should at least be able to read code," adds Alan Nugent, OMG board member and vice president of technology at Soft Machine.

Banks came to the course with C++ experience. "Not knowing C++," she points out, "would be a disadvantage."

Pick a course

Five-day courses from either vendor cost about $2,000. Volume discounts are available, usually starting at five people. One-day courses run about $300; three-day courses go for about $1,500.

Once you've taken the five-day course, you have to practice your CORBA skills. Fortunately, the demand for CORBA-capable people is ramping up. "Two years ago there was zero demand. Last year things started to pick up, but it is still early in the game," Hoffman reports. As more vendors ship object request brokers, he expects the demand for CORBA-trained people will increase.

People with CORBA experience say they are swamped. "Everybody I know with CORBA experience is maxed out," Kain says.

Nugent concurs. "I have been busier than I ever imagined. Companies can't find enough people," he says. ■

Radding is a free-lance writer in Newton, Mass.

OPEN ENROLLMENT TRAINING

Most courses to date have been private programs for individual companies. Sessions open to the general public are just getting started. A couple of upcoming programs include:

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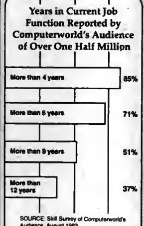

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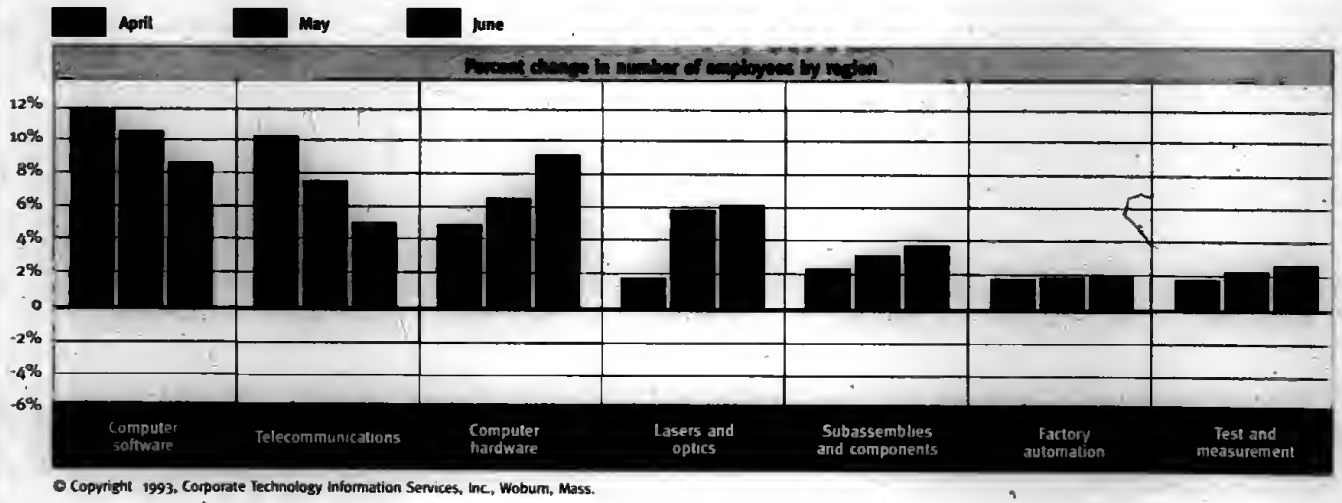

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Issue Date: October 31, 1994
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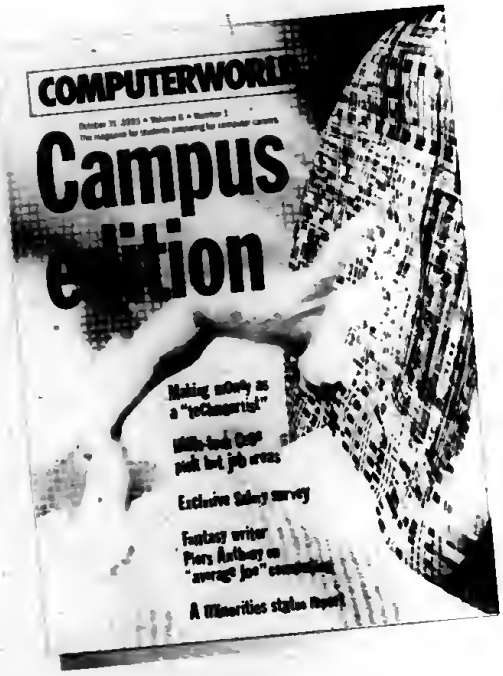

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Planned Editorial Features:
(subject to revision)

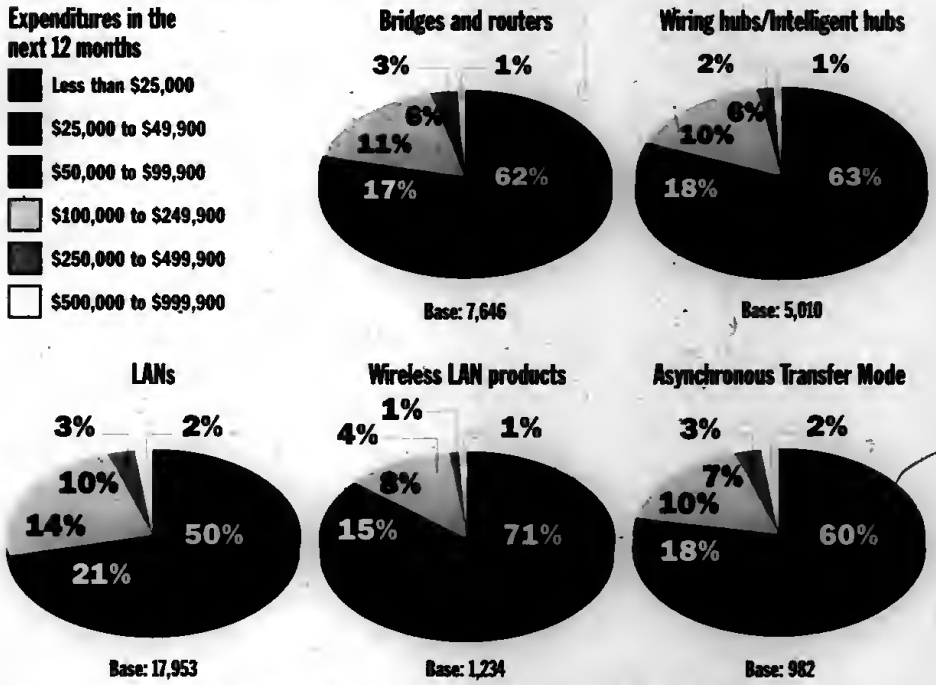
- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

Market pulse

69% of an 18,000-site database have purchased internetworking products. 31% plan to do the same this year. Here's where both groups are putting their money.

What they're spending

Most respondents plan to spend less than $500,000 on hardware, software, networking and contract services this year. The following is where they are allocating their dollars (by percent of purchase).



Source: *Computerworld* Database Division, Framingham, Mass.

Network managers are the top decision-makers for internetworking products at more than half of the responding companies. At 30% of the companies, this duty falls to the information systems planner.

Routers	65%
Switching hubs	45%
Non-switching hubs	34%
Fast Ethernet	31%
ATM LAN switches	24%
Wireless LANs	19%
Wireless bridges	14%
None	7%
Other	8%

Percent of respondents indicating purchase plans in the next 12 to 18 months (Multiple responses allowed)

Base: 353

Source: Business Research Group Newton, Mass.

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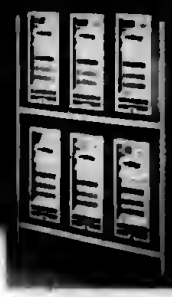

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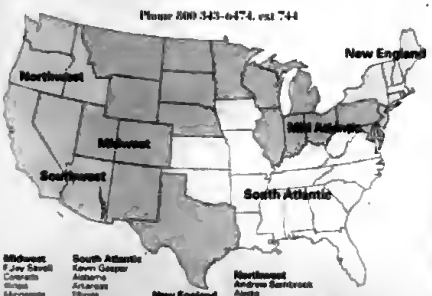

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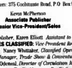

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Gainers / Losers

Percent

Gainers		Losers	
Dataram Corp	22.4	Broce Control Systems Inc.	-61.3
Borland Int'l Inc.	18.4	TriCord Systems	-44.9
Parallan Computer(L)	17.1	Interleaf Inc.	-38.5
Microcom Inc.	17.0	Proteon Inc.(L)	-27.3
Newbridge Networks Corp.	16.5	Knowledgeware Inc.(L)	-24.1
Cheyenne Software Inc.	16.4	Advanced Logic Research	-16.7
CE Software	15.9	Microage Inc.	-13.7
Frame Technology	14.9	Gupta	-13.3

Dollar

Gainers		Losers	
Cabletron Systems	8.50	Broce Control Systems Inc.	-11.50
Newbridge Networks Corp.	5.00	TriCord Systems	-5.00
Texas Instruments	4.38	IBM	-3.63
3COM Corp.	4.06	Xilinx(L)	-2.63
Chipcom Corp.	3.88	Microage Inc.	-2.50
Wall Data Inc.	3.25	Interleaf Inc.	-2.31
Wellfleet Communications	3.00	Boole & Babbage	-2.00
Cirrus Logic	2.31	Knowledgeware Inc.(L)	-1.75

Cabletron Systems, Inc. pumped up its price last week by announcing a stock repurchase program. Several PC hardware and software stocks benefited from PC Expo announcements.

[redacted]

IPO market bogs down

Brutal market conditions ground computer stock initial public offerings (IPO) to a halt at the end of the second quarter.

Sixteen companies with deals valued at more than $50 million took the plunge in the quarter, according to Technologic Partners in New York. That total included only two IPOs in June, although there were also a few offerings worth less than $50 million.

Although the general bloodletting may not be over yet, the IPO drought will likely ease somewhat, according to Charles Ronson, a money manager at Balestra Capital.

"The market is more willing to slam lower-quality offerings than before," Ronson said. "But high-quality offerings, like **Fore Systems** (FORE), are still in demand." Fore Systems, a maker of Asynchronous Transfer Mode LAN equipment, shot up from its IPO price of 16 to more than 24 on its initial trades in late May. —*Derek Slater*

Steppin' out

High-tech initial public offerings dried up in June under tough market conditions. (Only IPOs with market capitalization of $50 million or more are included.)

Company	IPO date	IPO price
Micro Technology, Inc.	4/7	9
Wandel & Goltermann	4/7	13
The Cerplex Group	4/8	11
Dialogic Corp	4/11	11
XcelleNet, Inc	4/14	11
Educational Insights	4/15	10
C-Cube Microsystems	4/21	15
Transaction Network Services	4/22	10
Alternative Resources	5/2	14
Investment Technology Group	5/4	13
Fusion Systems Group	5/12	16
Ascend Communications Inc	5/13	13
Altra Software Inc	5/13	12
Fore Systems	5/24	16
Indigo NV	5/24	20
Mecon	5/25	9
Geoworks	6/22	6
Network Peripherals	6/27	6

Source: Technologic Partners, New York

Exch	52-Week Range			July 1 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP [illegible]**
OTC	63.75	19.63	3COM Corp.	49.56	4.06	8.9
NYS	45.56	36.25	Ameritech Corp	38.75	-0.63	1.6
NYS	95.00	49.50	AT&T	54.25	0.13	0.2
OTC	36.50	13.00	Banyan Systems Inc	14.00	-0.25	-1.8
NYS	69.13	49.00	Bell Atlantic Corp	55.75	0.75	1.4
NYS	63.88	53.00	Bellsouth Corp	61.50	1.50	2.5
NYS	21.50	7.38	Bolt, Beranek & Newman	11.25	-0.25	-2.2
OTC	15.75	9.00	Brooktrout Technology	11.00	0.25	2.3
NYS	132.50	81.61	Cabletron Systems	97.38	8.50	9.6
OTC	43.00	17.50	Centigram Communications (L)	17.75	-1.00	5.1
OTC	60.25	31.50	Chipcom Corp	38.50	3.88	11.2
OTC	40.75	20.13	Cisco Systems Inc.	23.43	1.05	4.7
OTC	18.38	9.25	Compression Labs Inc	10.13	-0.75	2.4
OTC	12.50	6.50	Computer Network Tech.	7.00	0.00	0.0
OTC	33.75	8.50	CrossComm	9.00	-0.25	3.7
OTC	3.38	1.50	Data Switch Corp	7.44	0.09	3.7
OTC	36.56	17.88	DSC Communications (L)	19.25	0.61	3.6
NYS	17.63	8.00	General Datacomm Inds.	15.03	1.50	10.0
NYS	39.38	29.50	GTE Corp	30.75	0.50	1.2
NYS	95.97	77.09	ITT Corp.	81.88	-0.88	-1.1
OTC	29.00	21.50	MCI Communications Corp	22.25	-0.13	-0.6
OTC	7.75	1.50	Microcom Inc.	6.88	1.00	17.0
OTC	29.50	12.50	NetManage Inc.	16.00	0.75	5.7
OTC	7.25	3.50	Netrix Corp	5.00	-0.25	-4.8
OTC	8.75	3.63	Network Computing Devices (L)	3.69	-0.31	-7.8
NYS	11.13	6.63	Network Equipment Tech.	8.50	0.38	4.6
OTC	23.38	9.75	Network General	16.75	1.63	11.1
OTC	9.75	6.38	Network Systems Corp	6.75	0.13	1.9
OTC	73.88	31.38	Newbridge Networks Corp	35.38	5.00	16.5
NYS	33.75	21.38	Northern Telecom Ltd	28.00	0.75	-0.9
OTC	18.00	15.38	Novell Inc	16.50	1.88	12.8
NYS	46.88	33.25	Nynex Corp	37.50	1.50	4.2
OTC	30.00	16.50	Octel Communications Corp.	17.00	-0.75	-4.2
OTC	18.25	9.00	Optical Data Systems Inc	13.25	0.25	1.9
OTC	7.50	3.50	Penril Data Comm Networks	4.00	0.60	16.3
OTC	27.75	10.00	Picturetel Corp	12.50	0.25	1.0
OTC	8.25	2.75	Proteon Inc. (L)	3.00	-1.11	-27.3
OTC	14.38	5.88	Racotek Inc	6.75	0.00	0.0
NYS	38.38	24.88	Scientific Atlanta Inc	34.13	0.63	2.9
NYS	47.00	36.75	Southwestern Bell Corp	43.00	0.61	1.5
NYS	40.25	31.38	Sprint Corp	35.00	0.75	2.2
OTC	26.75	11.38	Standard Microsystems Corp (L)	14.75	0.88	6.3
OTC	23.75	11.38	Stratacom Inc.	21.25	0.50	2.4
OTC	40.75	13.88	Synoptics Communications (L)	14.75	0.25	1.7
OTC	15.75	3.88	Telebit Corp.	3.50	0.06	1.8
OTC	40.00	21.25	US Robotics	28.50	0.38	1.4
NYS	50.75	38.25	U S West Inc	41.75	1.13	2.6
OTC	43.88	14.38	Wellfleet Communications	25.25	3.00	13.5
OTC	38.25	12.75	Xircom	15.75	1.25	8.9
OTC	23.00	12.75	Xylogics Inc.	17.75	1.00	-5.5
OTC	30.00	12.25	Xyplex Inc (L)	13.00	0.25	1.8
PCs and Workstations						**UP [illegible]**
OTC	7.50	2.63	Advanced Logic Research	4.38	0.88	16.7
OTC	45.35	27.00	Apple Computer Inc	36.00	-0.13	0.5
OTC	33.00	12.50	AST Research Inc	16.13	1.13	0.7
NYS	39.00	14.38	Compaq Computer Corp	32.43	0.63	2.0
OTC	50.75	13.50	Dell Computer Corp	25.25	0.63	2.5
OTC	35.00	9.25	Gateway 2000 Inc	20.63	-0.13	1.2
NYS	81.63	64.38	Hewlett Packard Co.	75.00	-0.88	1.2
NYS	26.88	16.00	Silicon Graphics	22.88	1.50	7.0
OTC	31.38	16.25	Sun Microsystems Inc.	20.38	1.88	10.1
NYS	50.75	28.13	Tandy Corp	34.50	-0.13	-0.4
OTC	5.13	2.38	Zeos International Ltd	2.63	0.13	5.0
Large Systems						**OFF [illegible]**
ASE	7.88	4.38	Amdahl Corp	5.50	0.25	4.3
NYS	7.40	3.61	Convex Computer	5.75	0.25	4.5
OTC	4.50	0.50	Cray Computer	3.00	0.00	0.0
NYS	33.75	19.13	Cray Research Inc	22.00	-0.50	-1.2
NYS	10.75	6.63	Data General Corp	7.50	0.38	5.3
NYS	43.13	18.75	Digital Equipment Corp	50.88	-1.00	-5.0
OTC	6.38	2.38	Encore Computer Corp	4.00	0.06	1.5
NYS	57.15	36.38	Harris Corp	44.00	1.63	-3.6
NYS	65.00	40.63	IBM	57.13	3.61	6.0
OTC	18.75	7.25	NetFrame (L)	8.50	0.38	4.6
OTC	26.00	4.00	Parallan Computer (L)	5.13	0.75	17.1
OTC	23.35	3.63	Pyramid Technology (L)	5.88	0.00	0.0
OTC	20.00	11.13	Sequent Computer Sys	13.13	0.11	-0.9
OTC	6.84	1.75	Sequoia Systems Inc.	3.88	0.50	14.8
NYS	33.13	20.75	Stratus Computer Inc.	20.13	-0.13	-0.4
NYS	16.38	8.50	Tandem Computers Inc.	11.38	-0.25	-2.1
OTC	30.00	6.13	TriCord Systems	6.13	5.00	-44.9
NYS	16.50	8.63	Unisys Corp. (L)	9.25	0.30	6.2
Software						**OFF [illegible]**
OTC	34.50	16.25	Adobe Systems Inc.	27.25	1.13	4.3
OTC	34.50	13.50	Aldus Corp	25.38	0.11	1.2
OTC	8.38	4.50	American Software Inc.	4.88	0.13	2.6
OTC	15.75	6.75	Ask Computer Systems	13.00	-0.25	-1.9
OTC	61.75	37.00	Autodesk Inc	48.05	1.33	-2.7
OTC	4.50	2.00	Bachman Info. Systems	2.00	-0.13	-5.8
OTC	34.00	20.50	BGS Systems Inc.	25.00	0.50	2.0
OTC	71.00	41.75	BMC Software Inc.	44.13	1.88	4.4
OTC	30.75	22.50	Boole & Babbage	25.50	-2.00	-7.3
OTC	21.50	8.50	Borland Int'l Inc.	10.38	1.63	18.6
OTC	25.00	2.25	Broce Control Systems Inc	7.25	-11.50	-61.3
OTC	4.61	2.38	CE Software	3.14	0.44	15.9
ASE	30.34	6.25	Cheyenne Software Inc	8.88	1.25	16.4
OTC	14.25	7.38	Cognos Inc	10.73	-0.88	-7.5
NYS	44.88	27.00	Computer Associates	40.13	1.50	3.5
NYS	5.50	1.13	Computervision Corp.	3.75	0.00	0.0
OTC	48.25	21.00	Compuware Corp	42.00	1.75	4.3
OTC	14.00	6.00	Comshare Inc.	12.75	0.00	0.0
OTC	25.00	7.75	Corel Corp	17.25	0.00	0.0
OTC	7.75	3.38	Easel Corp	3.88	-0.25	-6.1
OTC	29.75	11.75	Filenet Corp	17.75	1.50	9.2
OTC	25.00	3.50	4th Dimension (L)	3.69	-0.31	7.8
OTC	12.50	5.63	Frame Technology	10.61	1.38	14.9
OTC	13.00	7.00	Group 1 Software	9.75	1.13	13.0
OTC	31.75	9.75	Gupta	9.75	-1.50	13.3
OTC	12.00	7.44	Hogan Systems Inc.	7.44	-0.50	-6.3
OTC	29.50	16.00	IMRS	22.00	1.63	6.4
OTC	44.75	13.50	Information Resources	14.75	0.03	6.4
OTC	26.75	14.75	Inforonix Corp	11.75	1.25	8.0
OTC	12.38	[illegible]	Intergraph Corp	9.42	0.05	0.5
OTC	8.75	[illegible]	Interleaf Inc	3.69	-2.31	-38.5
OTC	15.50	4.75	Intersolv Inc.	10.25	0.00	3.3
OTC	50.00	27.00	Intuit Inc.	33.63	2.13	6.7
OTC	18.75	5.50	Knowledgeware Inc. (L)	4.50	-1.75	-24.1
OTC	34.75	15.50	Legent Corp	25.50	-0.25	1.0
OTC	86.50	30.25	Lotus Development	31.67	0.17	0.1
OTC	18.50	8.50	Magic Software Enterprises (L)	6.75	0.00	0.0
OTC	18.50	6.00	Manugistics Group Inc	7.75	0.25	3.1
OTC	10.00	7.61	MathSoft	5.75	0.00	0.0
OTC	11.75	4.50	McAfee Associates	7.25	0.00	0.0
OTC	17.75	8.38	Mentor Graphics	10.38	0.00	0.0
OTC	31.38	21.50	Micro Focus	21.50	0.13	0.6
OTC	11.63	4.75	Micrografx Inc	4.75	0.25	5.6
OTC	54.61	35.18	Microsoft Corp	50.50	[illegible]	0.7
OTC	58.75	22.88	Oracle Corp (H)	37.41	0.80	2.1
OTC	66.75	21.50	Parametric Technology (L)	29.00	-0.38	1.4
OTC	24.50	14.25	ParcPlace Systems Inc	10.50	2.00	13.9
OTC	41.38	16.00	Peoplesoft	34.50	0.88	2.9
OTC	6.75	1.50	Phoenix Technologies	4.50	-0.25	3.3
OTC	69.50	24.25	Powersoft	48.50	-0.75	1.5
OTC	39.75	3.50	Platinum Software	6.75	0.00	0.0
OTC	14.75	7.25	Platinum Technology	12.50	0.25	3.0
OTC	60.25	27.00	Progress Software Corp	30.75	1.31	4.5
OTC	4.13	1.94	Quarterdeck Office Sys	2.69	0.06	-2.3
OTC	33.00	11.75	Rainbow Technologies Inc. (L)	12.00	1.50	13.1
OTC	11.88	4.00	Rasterops	4.38	0.13	2.8
OTC	14.50	3.25	Ross Systems (L)	3.75	-0.31	0.1
OTC	28.75	3.00	Sapiens Intl. Corp. NV	4.25	-0.50	13.3
OTC	14.93	9.75	Softkey International Inc	17.64	-0.31	2.4
OTC	8.63	3.75	Software Publishing Corp	4.13	-0.29	-5.7
OTC	13.75	5.00	State of the Art	6.00	[illegible]	2.1
NYS	35.63	18.75	Sterling Software Inc.	30.25	-1.25	-4.0
OTC	21.63	9.13	Struct. Dynamics Research	9.75	-0.29	2.5
OTC	57.00	25.25	Sybase Inc.	40.00	2.25	4.8
OTC	30.50	9.88	Symantec Corp. (L)	10.50	0.13	-1.2
OTC	52.75	33.00	SynOpsys	36.88	1.38	3.9
OTC	24.25	11.75	System Software Assoc.	13.75	0.13	0.9
OTC	6.75	3.00	Timeline Corp	3.88	-0.25	5.5
OTC	30.88	14.75	Viewlogic Systems	15.25	-0.50	3.2
OTC	23.25	10.50	VMark Software Inc.	17.50	-0.44	2.4
OTC	13.25	5.50	Walker Interactive Systems	8.75	0.00	0.0
OTC	60.00	19.50	Wall Data Inc.	40.00	3.25	6.9
Semiconductors						**UP [illegible]**
NYS	32.75	16.75	Advanced Micro Devices	25.75	1.38	5.6
NYS	31.13	19.13	Analog Devices Inc.	29.00	-1.75	8.4
OTC	29.61	[illegible]	Atmel Corp	21.75	-0.38	-7.4
OTC	7.50	3.63	Chips and Technologies	5.75	-0.25	-4.3
OTC	44.61	19.75	Cirrus Logic	30.94	2.31	0.1
NYS	19.88	13.25	Cypress Semiconductor Corp	16.38	0.00	0.0
NYS	20.13	13.00	Dallas Semiconductor	18.11	0.13	0.7
OTC	27.75	14.75	Integrated Silicon Systems	17.61	2.13	13.7
OTC	74.50	49.25	Intel Corp	58.25	-0.25	-0.4
NYS	26.38	13.00	LSI Logic Corp	21.13	1.50	6.3
OTC	26.75	13.25	Lattice Semiconductor	18.38	0.75	1.4
NYS	39.93	15.38	Micron Technology	34.25	1.25	3.9
NYS	54.00	41.25	Motorola Inc.	46.75	1.00	-2.2
NYS	25.00	14.38	National Semiconductor	17.25	-0.38	-2.1
OTC	10.13	6.50	Sierra Semiconductor	9.75	0.50	6.5
NYS	84.50	55.75	Texas Instruments	79.88	4.38	-5.9
OTC	18.88	9.38	VLSI Technology	13.61	0.50	-3.8
OTC	14.38	3.38	Weitek	3.75	-0.25	-6.3
ASE	10.38	3.63	Western Digital Corp	13.00	0.75	6.1
OTC	59.75	32.38	Xilinx (L)	32.38	2.63	-7.5
OTC	40.75	13.75	Zilog Inc	32.75	2.13	6.8
Peripherals and Subsystems						**UP [illegible]**
OTC	30.50	14.50	American Power Conversion	15.03	0.13	0.8
OTC	24.75	17.75	Banctec Inc	20.00	1.75	1.9
OTC	2.25	1.25	Cambex Corp	4.50	0.75	-5.1
ASE	7.38	1.00	Cognitronics Corp	2.75	0.13	4.8
NYS	20.50	9.00	Conner Peripherals	12.13	-0.75	2.0
OTC	39.63	8.75	Creative Technologies Inc.	17.38	-0.25	1.4
OTC	16.43	4.25	Data Race Inc.	5.75	0.00	0.0
ASE	31.75	4.13	Dataram Corp	9.13	0.94	22.4
NYS	33.00	30.13	EMC Corp	23.75	0.38	1.6
OTC	8.75	3.13	Emulex Corp	6.63	-0.38	-5.4
OTC	21.00	13.30	Evans & Sutherland (L)	14.00	-0.50	3.4
OTC	22.50	7.50	Exabyte	14.50	0.13	0.9
OTC	34.00	6.75	Intelligent Systems	5.50	0.13	2.3
OTC	4.38	2.00	Iomega Corp	2.63	-0.13	5.3
OTC	4.75	3.75	IPL Systems Inc.	3.75	-0.38	-0.1
OTC	26.50	13.25	Komag Inc.	18.25	0.13	0.7
OTC	8.61	4.50	Maxtor Corp	4.88	0.06	1.3
OTC	8.75	4.88	Micropolis Corp	5.88	0.25	6.4
OTC	22.50	10.00	Pinnacle Micro Inc.	14.75	-0.50	3.4
OTC	9.75	6.25	Printronix Inc.	9.25	-0.38	3.9
NYS	11.75	7.13	QMS Inc. (L)	7.25	9.00	0.0
OTC	26.25	9.38	Quantum Corp	13.00	0.88	7.2
OTC	9.13	3.63	Radius Inc.	4.88	0.38	0.1
NYS	17.75	8.13	Recognition International (L)	6.50	0.13	1.5
OTC	6.88	3.63	Rexon Inc.	5.88	0.13	2.2
OTC	28.75	18.88	Seagate Technology	20.09	0.13	0.6
NYS	41.61	13.75	Storage Technology	11.25	0.00	0.0
NYS	33.38	21.38	Tektronix Inc.	28.13	-0.75	2.6
NYS	104.88	69.88	Xerox Corp	98.00	0.00	0.0
Services						**UP [illegible]**
OTC	25.50	14.88	American Mgmt. Systems	21.38	0.13	0.5
NYS	4.35	2.50	Anacomp Inc.	3.00	-0.13	4.0
OTC	23.50	16.50	Analysts Int'l	16.50	0.75	4.0
NYS	56.88	47.00	Auto Data Processing	53.50	0.61	1.2
OTC	18.75	9.25	Cambridge Tech. Partners	16.00	1.00	0.7
NYS	35.43	14.38	Ceridian Corp (H)	24.75	0.50	2.1
NYS	26.35	14.00	Comdisco Inc	19.00	0.25	1.3
OTC	12.50	4.84	Computer Horizons	8.50	-0.13	-1.6
NYS	44.00	27.25	Computer Sciences	41.88	0.50	1.2
NYS	9.75	6.00	Computer Task Group	8.50	0.00	0.0
NYS	32.38	8.38	CompUSA Inc. (L)	9.00	0.38	0.2
OTC	13.50	7.75	Control Data Systems Inc.	8.50	1.00	10.5
OTC	11.00	6.63	Egghead Discount Software	7.19	-0.06	-4.2
NYS	38.00	26.00	General Motors E (EDS)	34.75	1.13	3.3
OTC	22.75	7.50	Inacom Corp	8.25	0.35	1.1
OTC	28.00	13.00	Intelligent Electronics	15.38	1.06	6.5
OTC	22.50	8.00	Merisel	8.75	0.25	2.9
OTC	32.50	8.66	Microage Inc	15.75	2.50	13.7
OTC	40.50	27.00	Paychex	29.50	0.75	0.8
NYS	34.75	21.63	Policy Management Sys	32.88	2.00	0.9
NYS	35.50	18.63	Reynolds and Reynolds	23.13	-0.13	-0.5
OTC	28.50	16.25	SEI Corp	18.50	-0.50	2.6
OTC	29.38	17.50	Shared Medical Systems	24.00	0.50	2.1
OTC	11.88	5.61	SHL Systemhouse	6.25	0.00	0.0
OTC	30.75	9.25	Software Spectrum Inc	17.50	0.00	0.0
OTC	42.75	30.75	SunGard Data Systems	36.50	1.25	4.1

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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OfficeMax-imizes

CONTINUED FROM PAGE 1

five seconds or less.

"There's a difference between shopping and waiting on line, so the technology that serves the customer best is the one that will win in the end," said Robert E. Wood, director of computer services at OfficeMax, the nation's second-largest office supplier.

Managers at OfficeMax outlets already linked to the frame-relay network said their customers are upbeat about the improved services.

"With the new centralized computer system, customers can find out which store is carrying specific merchandise, and that's something they have reacted positively to," said Dave Braemer, a receiving manager at an OfficeMax store in Union, N.J.

OfficeMax customers are upbeat about the improved services.

Technology deployment

Analysts said they believe OfficeMax's frame-relay network — which is expected to grow by 70 to 80 stores annually in the next several years — is the largest deployment of the technology to date. Retailers and other geographically diverse organizations have rapidly been adopting it in their efforts to reduce telecommunications overhead.

For example, Federated Department Stores in Cincinnati recently hired Network Equipment Technologies, Inc. in Redwood City, Calif., to install a 250-node frame-relay backbone, according to Curtis Price, research manager of data communications at International Data Corp. in Framingham, Mass.

"From a cost standpoint, communications tends to represent 30% to 40% of the networking costs for most organizations, so what you're starting to see are a lot of companies with multiple remote sites moving to frame relay to reduce their costs," Price explained.

OfficeMax, which is 92% owned by Kmart Corp., had considered satellite transmissions among its stores, headquarters and credit authorizers, Hnaniecek noted. But the satellite technologies offered smaller bandwidth in the 19.2K bit/sec. range and would have locked the retailer into a five-year capital investment.

Routers installed

To support the new communications infrastructure, which is scheduled for completion by early September, OfficeMax has installed three Cisco Systems, Inc. Cisco 7000 routers at its headquarters with T1 links into the frame-relay network from the corporate offices. From the stores, 56K bit/sec. digital data circuits connect to the frame-relay network.

The digital data circuits are attached to in-store Ethernet LANs at each location which, in turn, are connected to Unisys Corp. U6000/65 Unix-based in-store processors and Unisys f486-based point-of-sale processors. Each store is equipped with both a Novell, Inc. NetWare 3.11-based and a TCP/IP LAN.

The communications overhaul comes at a critical juncture for OfficeMax. The 6-year-old retailer is in a heated market share battle with industry leader Office Depot, Inc. in Delray Beach, Fla., and Framingham, Mass.-based Staples, Inc., the nation's third-largest office superstore chain.

Although the three office supply giants hold only a combined 6% of the $90 billion U.S. office supply market, the industry is still highly fragmented. That leaves vast opportunities for all major players to increase their market share, said Kevin Tawes, a retail analyst at Dean Witter Reynolds in New York.

Supply-side economics

In addition to its ongoing frame-relay project, OfficeMax has nearly completed a two-year effort to replace its Wang VS 10000 machine at its Shaker Heights, Ohio, data center with a Unisys U6000 Model 65 Unix server.

To further its migration to open systems, OfficeMax also added another 350 Unisys f486-based, front-end PCs to each store.

Those point-of-sale systems will route the retailer's credit authorization messages over the frame-relay network to its headquarters and will relay inventory and sales data from the stores to the company's headquarters. The Unisys point-of-sale systems will replace Fujitsu-ICL Systems, Inc. controller registers, which will now be used as dedicated cash registers, according to John Hnaniecek, senior vice president of information systems at OfficeMax.

Unix power

The power that Unix servers offer today has helped keep the retailer from taking a more proprietary approach to crunching its numbers, Hnaniecek said. "We're a $1.8 billion company using a Unix parallel processor that cost us less than $500,000, vs. a mainframe that would have cost us several million dollars," the IS vice president pointed out. "This whole advent of open systems has enabled us to use capital more efficiently." — *Thomas Hoffman*

Support apps move to client/server

CONTINUED FROM PAGE 1

added customer service functions to its Notes Version 3.1. Lotus officials estimate that 40% of the Notes installed base are already using the software for customer support operations.

Customer support packages target both external customer support and internal help desk operations. The newer applications deliver text management and query functions, customer tracking, report generation and the ability to generate electronic mail.

Whether users roll their own or install shrink-wrapped software, they all say client/server-based customer support systems give them more functions and easier-to-use front ends. In addition, the systems are typically designed to work with Unix-based relational database management systems, the heart of many client/server initiatives. That makes it easier for the new systems to integrate with other key business functions such as sales automation and order entry.

The good side

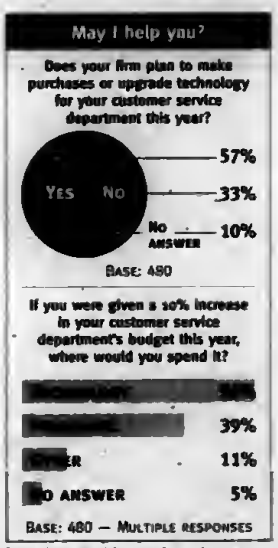
The upshot, users said, is relief from the inflexibilities of homegrown mainframe systems that limit support teams' information access and often prohibit basic tasks such as text searches.

"Our in-house system was very hierarchical and very cumbersome," said Marquett Smith, manager of technical services at America Online, Inc. in Vienna, Va., which recently replaced an older mainframe system with Vantive software. "You would have to go down a chain, and if you hit the wrong F key, you had to go all the way back up. You couldn't do searches."

Flexibility is a must for a growing number of departments — from internal help desks to product support centers fielding thousands of calls daily — charged with ever-widening responsibilities.

For instance, at Travelers Insurance Co., which is migrating to a client/server-based system, 14 customer service representatives staff the insurer's human resources help line. They process payroll, pension, insurance and other health and welfare requests from 40,000 employees and another 8,000 retirees nationwide. Before the team was assembled, the same kinds of questions were fielded by no fewer than 30 different departments, according to manager Dawn Berner.

At Rohm and Haas Co.'s customer service operations in Charlotte, N.C., which also plans a client/server migration, support staffers issue credits and refunds as well as set prices in some cases, according to Carol Bozeman, customer service manager at the Philadelphia-based pharmaceutical company.



Source: International Customer Service Association, Chicago

Bozeman said it is only logical for customer service to take on these tasks. "They're the ones who get the calls and know what's happening," she said. "What we're trying to do by expanding [our customer service representatives'] responsibilities is speed up service as well as increase accuracy."

Jennifer Scholze, a senior analyst at International Data Corp. in Framingham, Mass., noted that "client/server gives you the infrastructure to integrate customer service with other segments of the business."

"The customer support person is much more empowered by having their fingers in the other pieces of the business," Scholze added.

"You will find many companies and service providers at a crossroads," said Bob Johnson, a senior analyst at Dataquest, Inc. Many companies, he said, are now deciding whether they should continue to boost mainframe-based, homegrown systems or look for commercial client/server products.

Building their own

In some cases, companies are deciding to build their own client/server customer support systems because the tools are available, and packaged alternatives may lack the industrial strength they need.

"We looked at the market as recently as three months ago, and nothing fit our plan for a state-of-the-art [customer service] system with links between manufacturing, distribution, credit, accounts receivable and sales," said John Kressaty, director of customer service at S.C. Johnson & Son, Inc.

So now, the Racine, Wis.-based firm is building its own system to give the company's 46 customer service representatives access to just about every other system companywide.

"The customer service representative's job is growing all the time," Kressaty said. "Many reps have the authority to bill and to schedule trucks. In all, their job has grown fourfold, so everything leads toward them needing more than a terminal. That's what makes client/server so important to us today."

Wysiwyg

Great names
Tom Trainer
Vice president and CIO, Reebok International Ltd., Stoughton, Mass.

◆ ◆ ◆ ◆

Infobahnspeak
Abbreviations to use in your info-highway mail:

lhfn
I hate this foul network
(Note that "foul" may be replaced with other terms)

nfp
no flames please

ttyl8r
talk to you later

tia
thanks in advance

zoso
zoned out, sort of

BEST TITLE IN THE "BUSINESS IS WAR" CATEGORY:

Visiting Professor of Information Warfare
A position at National Defense University in Washington currently held by Paul Strassmann

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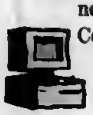
Did you know there is such a thing as the Historical Computer Society? This international users group brings together "admirers of the youngest antiques around." HCS has more than 25 classic computers in its collection, including the Altair, IMSAI, Osborne, PET and more. It puts out a himonthly newsletter called "Historically Brewed." Contact: **David Greelish, (915) 822-2683.**



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Inside Lines

IBM on the acquisition trail . . .
IBM Senior Vice President Ellen Hancock said last week that the company is in acquisition discussions with two or three small firms, defining "small" as those with revenue of less than $100 million. Hancock said she plans to beef up IBM's range of PC software suite offerings, but the networking chieftain intends to focus on packages of tools and languages rather than personal productivity applications. Meanwhile, Hancock is trimming the fat off her internal network systems organization, to the tune of almost 800 employees. An IBM spokesman tells us these are focused cuts, aimed at removing those with outmoded job skills. IBM's hot new hiring area these days is client/server and Asynchronous Transfer Mode.

New kids on the PC block: Marvel and Warp
Trying to beat Microsoft to the punch, IBM is reportedly building a connection into the upcoming 4M-byte version of OS/2 that gives users access to a range of on-line services. Microsoft is doing the same with Windows 4.0, code-named Chicago, using a product called Marvel. IBM is expected to deliver its product, code-named Warp, in September, while Microsoft may not deliver Chicago until early next year.

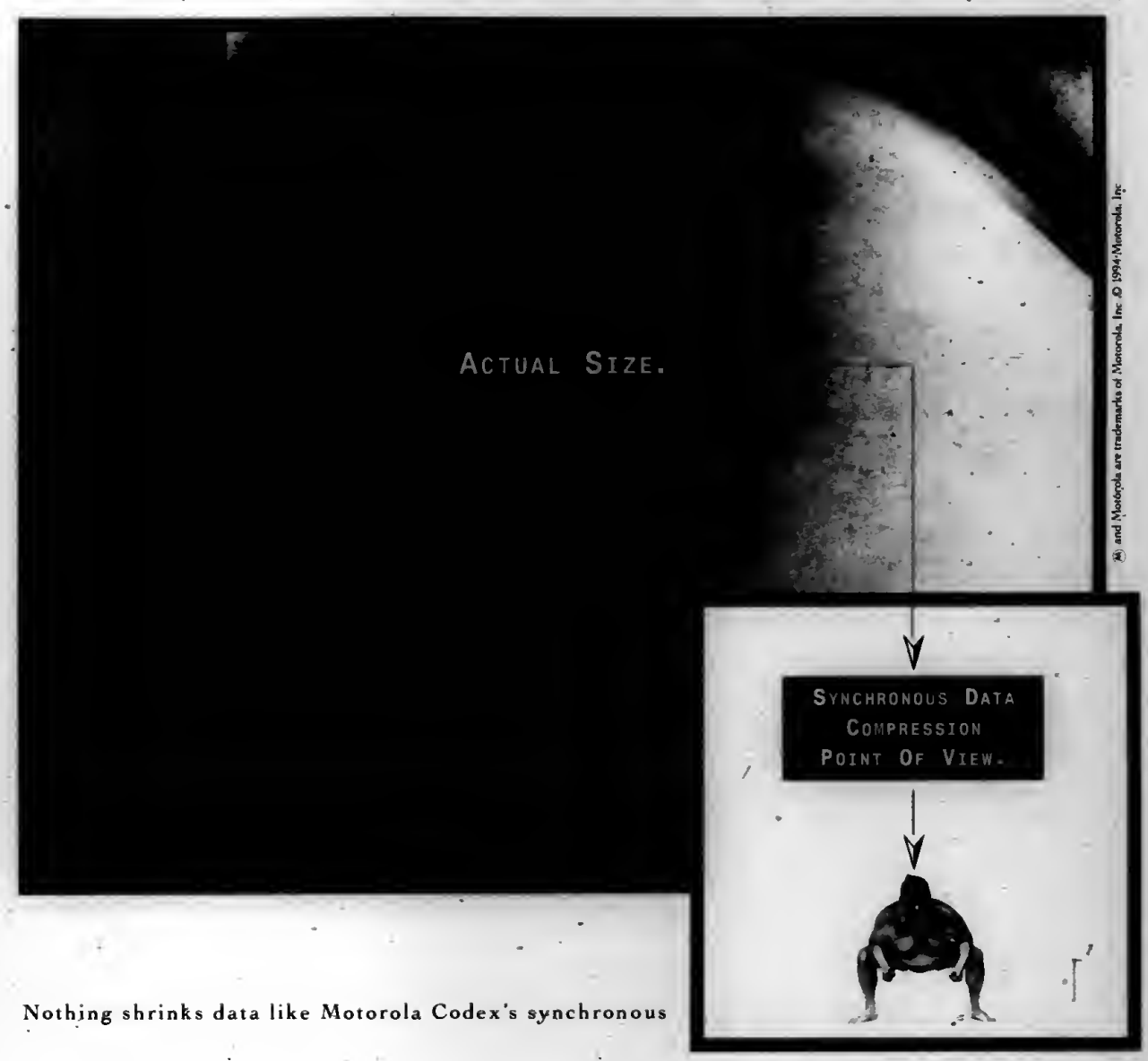
Query quandary
While a new version of DB2 is due out early next year for IBM's System/390 Parallel Transaction Server, the companion System/390 Parallel Query Server (PQS) is not scheduled to take full advantage of the on-line updating capabilities offered by the database until 1996. A stand-alone PQS system promised for the second half of 1995 will still require that either a full database or a partition in it be shut off from queries to do updates, IBM officials said.

Oracle ignites user ire
The powerful, 450-member New York Oracle Users Group is preparing the opposite of fan mail for Oracle leader Larry Ellison to complain about the database maker's recent treatment of the group. Two Oracle officials scheduled to appear last week at a discussion of specific technical and support issues with users pulled out, topping off a series of similar incidents in recent months, said Carl Esposito, president of the group. "What kind of business sense is this — to . . . neglect the biggest [regional] Oracle user group, which has already put Oracle on hot coals?" he fumed.

Take this job and leave it
Former AT&T honcho-gone-Hollywood Robert Kavner took care of his employees before he bolted, said one former AT&T staffer who attended PC Expo in New York last week. "He started telling us all to leave, that we could do better than AT&T," said the source, who is happily settled in a new job. "We couldn't understand why he was doing this until he left."

Whoops! Forgot that ol' CC:Mail
In its announcement last week of a new developer support program for Notes, Lotus neglected to mention that the program includes CC:Mail mail developers. Some grumbled that the omission was evidence that Lotus is quietly pushing its CC:Mail customers toward the more expensive and complicated Notes groupware.

If you still think you're missing vital developments in the O. J. Simpson saga, despite 'round-the-clock updates on TV and radio, Mead Data Central has the on-line service for you. A new option in the Lexis/Nexis "Extra" file provides users with access to a variety of documentation related to the case, including court and press conference transcripts, attorney profiles and forensic experts' testimony. The Extra file is located in the States and Genfed libraries of Lexis and Nexis. . . . But if you've got some non-O. J. news or tips of your own to share, please call Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*



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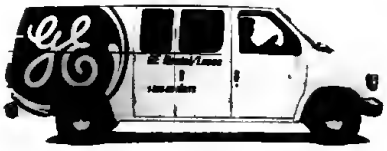

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